CHENNAI OUTER RING ROAD (CORR)

Environment, Social and Safety Management Plan (ESSMP)

as per IFC Guideline and SBIM requirement

Rev.02	**Prepared by**	**Reviewed and Recommended By**	**Approved by**
Date 2 Feb-2015	Amol Deore HSE Officer	Anil Shimpi Head-HSE	Mr. M.Sarvanan Sr.General Manager

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Chapter – I: Brief Introduction of Project

Government of Tamil nadu (Highways and Minor Port Department) has undertaken a development of Chennai outer Ring Road, Phase II from Nemilicheri in NH 205 to Minjur in Thiruvottiyur- Ponneri- Panchetti (TPP) Road on Design, Built, and Finance, operate and transfer (DBFOT) Annuity basis at Chennai, in the state of Tamilnadu.

The objective of this project is to connect the ports to major state and National Highways to ensure smooth and easy transportation of goods from port to major cities without hindering in to city traffic. This will enhance the imports, exports and economy in the country.

The Contract Features are as follows:

Sr. No.	Particulars	Description
1	Name of Contract	Development of Chennai Outer Ring Road - Phase II from Nemilichery in NH 205 to Minjur in Thiruvovottiyur -Ponneri- Panchetti (TPP) Road on Design, Build, Finance, Operate and Transfer(DBFOT) Annuity Basis at Chennai, in the State of Tamil Nadu, India.
2	Total Length of Project	30.500 Km Segment- 1- NH205 to NH5,Ch.Km.0+000 to Km.18+420 Segment- 2 – NH5 to TPP Road Ch.Km.18+420 to Km.30+500.
3	Scope of Ashoka Buildcon Ltd.	NH205 to Thiruvallur - Red hills(SH-114) Length – 16.50 Km. (Km.0+000 to Km.16+500)
4	Authority	Tamil Nadu Road Development Company Ltd. Government of Tamil Nadu – Highways & Minor Ports Dept.
5	Independent Consultant	M/s. Aarvee Associates & Vax Consultant (JV)
6	Concessionaire	M/s. GVR Ashoka Chennai Outer Ring Road Ltd.,
7	EPC Contractor	Ashoka Buildcon Limited
8	Appointed Date	12th March 2014
9	Concession / Construction period of Project	Concession Period is 30 years, including a Construction Period of 30 Months
10	Completion date of Construction Period	913 days from the date of appointed date. 09th September, 2016

The project facilities include the following:

Sr. No.	Particulars	Description
1	Length of Project	16.50 Kms
2	Length of Service Road	16.50 Kms
3	Flyover	01 No.
3	Underpass	21 No's
4	Minor Bridge	01 No.
5	Vehicular Underpass	08 No's
6	Pedestrian Underpass	08 No's
7	Culverts	45 No's
8	Toll Plaza	01 No.
9	Truck Lay bays	01 No.
10	Bus bays and Bus shelters	16 Nos.
11	Road Amenities	01 No.
12	Intersections	18 No's

Chapter – II : Policy and Objective

ASHOKA

QHSE Policy

We, at ASHOKA BUILDCON LTD. are committed to become an icon in infrastructure development, through innovation, professionalism, active leadership in product quality and sustained growth by delivering value to our customers.

We shall conduct our operations in a manner so that we protect people, property and the environment by identifying, controlling and reducing all associated risks to a level As Low As Reasonably Practicable.

This will be achieved by: -

1. Our commitment to continual improvement of quality, environmental, occupational health & safety management system performance.
2. Commitment to prevention of pollution, injury and ill health.
3. Complying with all applicable legal and contractual requirements.
4. Adopting state of art technology available.
5. Communicating and consulting all associated stakeholders for establishing organizational objectives.

Ashok Katariya
Chairman

Date: 1st August 2013

This Policy will be implemented by the CORR project Site and Management prior to commencement of construction of the Project. A copy will be provided to every employee of the company and will form part of the contract with sub-contractors engaged in activities associated with design, preconstruction, construction and operation and maintenance.

Objectives and Targets

ASHOKA

Quality, Health, Safety and Environmental Objectives

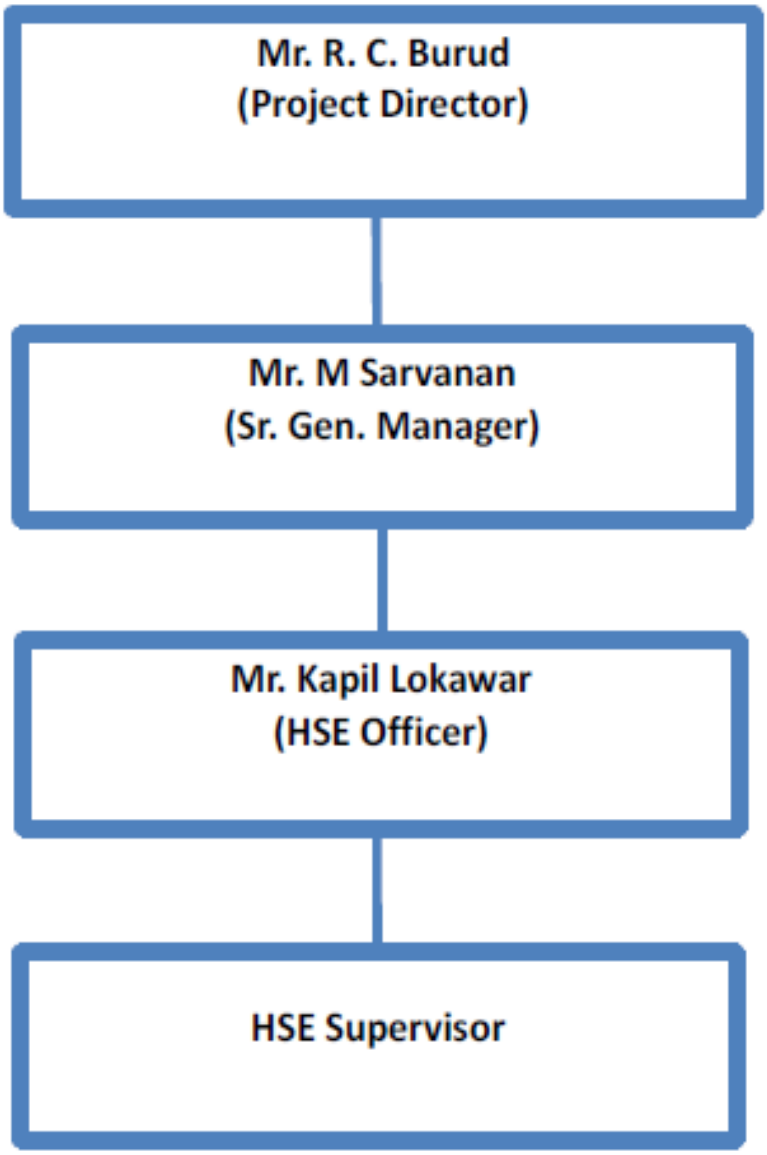
- To improve planning
- To reduce customer complaints
- To enhance motivation of employees
- To improve skills through training
- Complying with all the statutory rules and regulations
- Minimising Air, Land and Water Pollution and preventing injury and ill health.

Ashoka Buildcon Limited

Ashoka House, Ashoka Marg, Nashik 422 011, Maharashtra, India.

Chapter – III : Organizational Set up

Project Site HSE Organization Chart :



ROLES & RESPONSIBILITIES

The responsibility of implementation of the Environmental Management Plan rests with the following personnel involved in the implementation of the project.

PROJECT DIRECTOR

The Project Director is responsible for the overall implementation of the project. In the present case, the EPC contractors are also members of the SPV, VHPL, and hence the Project Director is responsible for undertaking the engineering, procurement and construction of the project.

- Guiding the formation of Policy & its Approval
- Giving the guideline for the Budget & its Approval
- Review of the safety & Environment Procedure & its Approval
- To provide guideline for All legal aspect of project & comply all environment legal rules & regulation.
- To provide guidance for the implementation of OHSAS & EMS System

PROJECT INCHARGE / SR. GENERAL MANGER

The Project Incharge / Sr. General Manager is responsible for the overall implementation of the project. The Project Incharge / SGM is responsible for undertaking the engineering, procurement and construction of the project. The SGM shall oversee the implementation of the ESSMP by assigning the necessary resources and periodically review the effective use of the ESSMP on site.

HSE Officer:-

- Implementing the HSE&S Manual, Environment Safety and Social Management Plan, Emergency preparedness plan and EPC HSE-Work Instructions;
- Train the workers and employee as per the training programs ;
- Prepare the HSE Training program as per the site specific requirement;
- Provide the Safety & Environmental awareness /Induction training to employee (EPC and subcontract employees) after getting the formal information from the HR & Admin Department;
- Carry out HIRA (Hazard identification and risk assessment) & EAI (Environmental Aspects and its Impacts) and prepare mitigation measures and approve it from Head- HSE&S ;
- Identify the IDLH /Risk and guide to process owner of risk for control measures.
- Daily Safety Observation Tour, Work place Monitoring, Safety Findings to be recorded & Informed to site Project Incharge and Process Owners;
- Conducting Safety Committee Meeting including preparation of agenda, near miss & accidents reports & forward to Corporate Office before 3rd of every month;
- Monthly HSE Report sending to be sent HSE- Corporate Manager before 3rd day of every month;
- Emergency preparedness plan and its effectiveness report (i.e. Mockdrill Report) on quarterly basis;
- Visit the labour camp, Workers canteen to do the audit on welfare provided and required.
- Accident reporting within 12 hours as per the Corporate guidelines to concern Govt. Authority and Head- HSE & S.

RESIDENT ENGINEER (RE) - ROAD AND BRIDGE WORKS

The Project Engineer - Road Works shall be responsible for implementation of the ESSMP during the construction of the road works. He being responsible for day to day operations with regards to road works shall supervise and oversee construction activities such as site clearances, stripping of top soil, excavations. Filling and laying material etc. which necessitates the operation of construction equipment and machinery at the site.
These activities would have environmental effects in terms of impairment to noise and air quality, tree cutting and severances and hence shall be responsible for implementing the ESSMP in the day to day activities of road construction. The Project Engineer – Bridge Works shall be responsible for implementation of the ESSMP during the construction of bridge works. These activities would necessitate diversion of roads, cutting of trees and diversion to natural drainage paths which would have a bearing on the environmental quality of the area. The RE (bridge works) shall be responsible for implementation of ESSMP with respect to environmental aspects during bridge construction.

SITE ENGINEERS/SUPERVISORS

The site engineers/supervisors report to the RE and are responsible for day to day operations of construction works in their respective areas. They supervise and oversee the construction activities and hence shall be made responsible for ground the ESSMP and minimize the impacts during construction. Some of the key aspects that shall be taken up by the site engineers/ supervisors shall include periodic sprinkling of water in inhabited areas during transportation of material and operation of construction machinery.

SUBCONTRACTORS

Sub contractors shall be sensitized on environmental aspects as they form part of the road construction in terms of transportation, earthwork, concrete and form work.
The environmental effects due to and transportation of material, debris removal and residues shall be properly conducted to minimise damage to the environment. The site engineers/supervisors shall be responsible for monitoring the implementation of ESSMP at this level.

Overall Responsibility - All Employees

Overall responsibility for the environment, social, occupational health and safety management system lies with the Project Head of the SPV who will establish and maintain an organisational structure that defines roles, responsibilities, and authority to implement the ESSMP. This will include the designation of in-house personnel during the different phases of the Project as described below.
The HSE &S activities will be carried out by SPV, EPC and/or O&M contractor and third parties. All these activities will be undertaken under contract with company and will be supervised by company which will ensure that all contracts include terms and conditions requiring contractors to adopt management systems which comply with the ISO 14001, OHSAS 18001 and with the ESSMP requirements.

Various Committees and Working

Project site management has formed various committees to implement the ESSMP smoothly. To address and resolve the issues related to Safety, Health, Environment, mess, labour camp, Employees grievances and public grievances, These committees will meet on following schedules

Sl. No.	Name of Committee	Committee Head/Chairman	Functional Responsibility	Frequency
01.	HSE Committee	Project In-Charge	HSE Officer	***Monthly***
02.	Canteen Committee	Project In-Charge	Base Camp HR In-Charge	***Monthly***
03.	Grievance Committee	Project In-Charge	Site HR Office/Liaisoning Officer	***Quarterly***
04.	Emergency Response Team	Camp In-Charge/Project Manager	HSE Officer/ HSE Supervisor	***Quarterly***

All the Committees do meet as per the Frequency stipulated and necessary decisions & implementations are monitored strictly by the Committee members. Also the grievances are resolved on priority.

HSE COMMITTEE CORR PROJECT

CHAIRMAN : Mr. M. Sarvanan (Sr. G.M.)

MEMBERS : Mr. Shrikumar Kothari (DGM): Mr. S K Ray (EQA-Road)

: Mr. Anil Kumar (P&M Dept.) : Mr. Kumar (EQA-Struct.)

: Mr. B. Talele (Stores Dept) : Mr. Y. M. Kotresh (QC Lab Dept.)

: Mr. Anthony Samy (Admin.) : Mr. Rohit Jagtap (HR Dept.)

SECRETARY : Mr. KAPIL LOKAWAR (HSE-Officer)

CANTEEN COMMITTEE CORR PROJECT

CHAIRMAN : Mr. Shrikumar Kothari (DGM)

MEMBERS : Mr. S K Ray (EQA-Road)

: Mr. Yuvraj Singh (P&M Dept.): Mr. Santhil Kumar (EQA-Struct.)

: Mr. Prabhu (Stores Dept) : Mr. Anthony Samy (Admin)

SECRETARY : Mr. ROHIT JAGTAP (HR Dept.)

GRIEVANCE COMMITTEE CORR PROJECT

CHAIRMAN : Mr. M. Sarvanan (Sr. G.M.)

MEMBERS : Mr. Shrikumar Kothari (DGM) : Mr. Y. M. Kotresh (QC Lab dept.)

: Mr. Dinesh Wagh (EQA-Road) : Mr. Anthony Samy (Admin)

SECRETARY : Mr. ROHIT JAGTAP (HR Dept.)

EMERGENCY RESPONSE TEAM - CORR Ph-II

Incident Controller (I.C.)

Mr. M. Saravanan

Mob. No: +918939814947 / Ext. No. : 101

Fire Fighting Team	Contact number	Rescue Team	Contact number	First Aid Team	Contact number
Team Leader - Fire Chief		**Team Leader - Rescue Chief**		**Team Leader - First Aid Chief**	
Mr. Y. M. Kotresh	**8939814950**	**Mr. S.K. Rai**	**8939814974**	**Mr. Rohit Jagtap**	**8939814912**
Senthil Raja	8939814953	B. M. Talele	8939814941	Anup Sharma	8939814949
Arun Singh	8939814925	Pramod Prabhu	8939814942	Anthony Somy	8939814972
Tushar Sonwane	8939814913	Shivaji Kasabe	8939814933	Shiva Kumar	893981457
Ravi Perumalla	9176257476	Nagesh Vadai	8939814970	Arun Boyal	8939814951
Mukesh Singh	8939814931	Ashok Mishra	8939814962	Moses Y.	8939814935
Kapil Lokawar	8939814944	Rajesh G.	8939814919	Gouranga Nayak	8939814903
Ravindra Reddy	8939814939	Junaid	8939814980	Yuvaraj Singh	8939814988
Prashant K.M	8939814943	S. Madhu	9176257447	Sunil Badgujar	8939814911

Chapter – IV : Statutory Clearances / License Details

Legal and Regulatory Requirements and Applicable International Standards :
Company and its EPC, Sub-contractors are governed by the various legislative rules and regulation set by Ministry of Environment and Forest (MoEF) and concerned pollution control boards.

The following Rules and Regulation are applicable for CORR Project :-

- MOEF Requirement Road construction -- EIA Report & Environment clearance from MOEF – Not Applicable
- Environment Protection Act :1986 - – Applicable
- The Water (Prevention & control of pollution) Act, 1974 - – Applicable
- The Water (Prevention & Control of pollution) Cess Act, 1977, including rules, 1978 - – Applicable
- The Air (Prevention & control of pollution) Act, 1984 - – Applicable
- The Hazardous Waste (Management & Handling) Rules, 2000 - – Not Applicable
- Manufacture, Storage & Import of Hazardous Chemicals Rules, 1989 - – Applicable
- Forest clearance for tree cutting (Local, State and Center if required) –- Applicable
- Local authority or *Grampanchyat* permission (NOC) for establishment of plant - – Applicable
- District Industry Center permission for industry - – Applicable
- Factory Act: 1948 (Crusher, HMP, RMC & CRMB) Plant Establishment - – Applicable
- State Factory Rule (Director of Industrial Safety and Health requirement) - – Applicable
- Building and Other Construction worker Act, 1996 –Not Applicable
- The Mines & Minerals Act, 1957 –- Not Applicable
- Mineral Concession Rules, 1960 - – Not Applicable
- Land acquisition Rule-1998 – Not Applicable
- Petroleum Rules, 1976 (Petroleum & Explosive Department) - – Applicable
- The Indian Electricity Rules, 1956 - – Applicable
- Batteries Act, 1989 - – Applicable
- Minimum Wages Act, 1948 - – Applicable

Various Statutory Clearances / Licenses have been obtained by CORR. The latest Renewed Copy, Renewal Applications which are under process and the Legal Matrix are attached below:

Legal Matrix (Camps) :

The Quarterly Legal Compliance report under Environment protection Act and Consent to Operate permissions /licenses is also done as per the following Format for the same:

Sr. No.	Location of camp / Detail Address as per agreement	Name of In charge	P &M Details with Capacity			
1	CORR, Vellanur Camp CH: 9+900 RHS	Mr. M. Sarvanan	Plant & Machinery			
			RMC Plant	60 TPH		
			WMM Plant	250 TPH		
			D.G. Set.	125 KVA		
Sr. No	**Name of the Licensing/ Registration Authority**	**Purpose**	**Number and Date of Registration/License**	**Validity Period**		**Update on any issue if any**
				From	**To**	
1	Consent For Establishment	Establishment of plant	961/F.AMB2481/GS/DEE/ TNPCB/AMB/A/2013	01.11.2012	31.10.2014	961/F.AMB2481/ GS/DEE/TNPCB/ AMB/W/2013
2	Assistant Commissioner Of Labour	Contract Labour Registration	RC No. 17/2014/TVR	29.4.2014	one time	
3	Ministry of Labour and Employment office of Assistant Labour Commissioner (central)	Contract Labour License	Licence No. - 1128/ TVR	2.06.2014	31.12.2015	Renewal Done
4	Deputy director of Industrial safety & Health	Factory Registration	C/1805/2014	25.07.2014	One time registration	
5	Deputy director of Industrial safety & Health	Approval drawing for factory License	T-1/20837/2014	02.09.2014	One time	
6	Govt Of Tamilnadu Factories, Boilers, Industrial Safety & Health	Obtaining of Factory License	LL.66419	1.1.2015	31.12.2015	
7	Plant and Machineries consent to operate, , RMC, WMM.	Consent for operation	1728/F.AMB2481/GS/DE E/TNPCB/AMB/W2013	17.7.2014	31.03.2015	1729/F.AMB2481 /GS/DEE/TNPCB/ AMB/W2013
8	Vellanur Grampanchayat NOC	Temporary Camp offices, accommodations for all staffs and workers, Batching plant, WMM Plant, HMP Plant, Work Shop, Precast Yard with Gantry, all material stock yard, Steel yard, store and other temporary sheds, Petrol Pump.		01.11.2013	One time	
9	Electrical Inspectorate	DG Set Commissioning Permission	LTG 1209/EI/CHN-West /Regn.32/SC/2014	10.07.2014	One Time	

Labour, WC, Minimum Wages, Contractor Labour, Employment License Details:-

The Company, SPV and EPC will base the employment relationship on the principle of equal opportunity and fair treatment, and will not discriminate with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, and promotion, termination of employment or retirement, and disciplinary practices.

The Company takes measures to prevent and address harassment, intimidation, and/or exploitation, especially in regard to women. The Company will ensure that all workers receive notice of dismissal and severance payments mandated by Indian labour law and collective agreements in a timely manner.

All outstanding back pay and social security benefits and pension contributions and benefits will be paid

(i) On or before termination of the working relationship to the workers,
(ii) Where appropriate, for the benefit of the workers, or
(iii) Payment will be made in accordance with a timeline agreed through a collective agreement. Where payments are made for the benefit of workers, workers will be provided with evidence of such payments.

The Company will provide a grievance mechanism for worker to raise workplace concerns. The company will inform the workers of the grievance mechanism at the time of recruitment and make it easily accessible to them. In Project office and Camp area grievance box for easy and immediate communication. The Company will provide a safe and healthy work environment, taking into account inherent risks in its particular sector and specific classes of hazards in the project work areas, including physical, chemical, biological, and radiological hazards, and specific threats to women. The client will take steps to prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, as far as reasonably practicable, the causes of hazards.

We are already in possession with the License for 1000 manpower & 300 Contract Labour in this project and an application has been filed in the O/o The Dy. Chief Labour Commissioner (C), GoI, Bhubaneswar for another 300 manpower increase in this project. We do also cover the Workmen Compensation act, 1923.

A number of Safety Signage's are on display near Educational Institutions along with several Safety Alert Signage's along the Project Stretch. Also we have provided Hard Barricading near High Risk Areas/Deep Excavation Areas along the Stretch.

Chapter V: All HSE Policies

Further we do follow the Applicable Policies & Guidelines framed by the Management and those are summarized below :

Sr. No.	Document Details	Document Code	Main objective of Document
1	Integrated Management System Manual	ACL/IMS (L-1)	1. Apex manual for IMS and ISO Standard requirement interlinking of clauses.
			2. Level One (L-1) Document for all Department heads. In this manual Scope, Company Profile and SPV companies and detailed procedure related to QMS, EMS & OHSAS has been mentioned.
			3. ACL Document control procedural guideline.
2	HSE Work Instruction	ACL /IMS/HSE/01	HSE Work Instruction for CO-HSE department, In CO-HSE department is having 10 Process. This Manual is applicable for All ACL-HSE Department with their defined Roles and responsibility.
3	Environment Social & Safety Management System Manual	ACL/ESSMSM (L-2)	1. Guideline for the Environment, Social & Safety Management as per the National Rule and Regulations applicable for the National Highway Projects & IFC Performance Standard.
			2. This Manual for ready reference for SPV & EPC contractor for implementation at project site.
4	Environment & Social management Plan - Standard operating Procedure	ACL/ESMP (L-2)	1. Operating procedure for SPV/ EPC to attend the Environment and Social issues related to National Highway Construction.
			2. Role & Responsibility has defined to take care of the process related environmental issues and resolve the E&S issue on the priority.

Sr. No.	Document Details	Document Code	Main objective of Document
6	Guideline for Traffic Management Plan	ACL/HSE&S/ESMP/GTMP/01	Safety of road users and project workers is a vital requirement which has to be attended during the contract period under the contract agreement; site design, planning, traffic diversion and procurement management are key controls for reducing the accidents caused by the vehicles.
7	PPE Matrix for road & bridge construction worker	ACL/HSE&S/ESMP/PPE Matrix/01	1. Awareness of employees about the use of PPE's as per theirs working activity.
			2. Information of PPE's about their life, IS Code and approx market rate.
			3. Guidance of process owners and store, purchasing staffs to communication with suppliers and workers
8	Emergency Response Plan	ACL/HSE&S/ERP/01	1. To define and implement an effective organization to respond and manage emergency to protect life, environment and properties
			2. To provide an effective and efficient response to and control emergences that may occur.
			3. To identify the individuals responsible for directing the activities required to contain, control and manage an emergency situation.
9	Tree Plantation Guideline for National Highway Projects	ACL/HSE&S/ESMP-TPGNHP/01	1. Reducing the impacts of air pollution
			2. Natural noise barrier
			3. Arrest of land erosion
			4. Providing much needed shade during the daytime
			5. Prevention of vehicle glare from vehicles coming from opposite direction
			6. Enhancement of an esthetic view of the corridors
			7. Climatic amelioration
			8. Defining of ROW especially at sharp curves during night.

Sr. No.	Document Details	Document Code	Main objective of Document
10	Guideline for Grievance Redressal Mechanism for SPV/EPC	ACL/HSE&S/ESMP-GGRM/01	1. To establish, maintain and improve the employee-employer relationship. 2. To facilitate for the restoring/improving the living of displaced persons. 3. To anticipate and avoid, or where avoidance is not possible, minimize adverse social and economic impact from land acquisition or restrictions on land use in consultation with the NHAI and State revenue Department.
11	IT Disaster response plan	ACL/HSE&S/IT-DRP/01	1. To define and implement an effective organization to respond and manage emergency to protect life, environment and properties. 2. To provide an effective and efficient response to and control emergencies that may occur. 3. To achieve the zero down time.
12	Guideline for Disposal of Construction Waste	ACL/HSE&S/ESMP/GDCW/01	1. Guideline for site people to dispose the construction waste during the construction of road activity.
13	Environment Monitoring Plan	ACL/HSE&S/ESMP/GEMP/01	1. Guideline for to monitor the Ambient Air Quality, Noise, Stack monitoring during the construction phase, Normal water & Drinking water quality.
15	Guideline for Tool Box	ACL/HSE&S/TOOL BOX TALK/01	ACL Corporate HSE department has prepared the 67 HSE related training modules for SPV /EPC's HSE Office for the implementation of HSE Training at Working site. One Consolidated Tool Box Talk on 22 Topic has been prepared for SPV /EPC Contractor's HSE Officer for the implementation.
16	Guideline for Monsoon Safety	Soft copy	ACL Corporate HSE department has prepared the Monsoon Safety for SPV /EPC contractor.

Sr. No.	Document Details	Document Code	Main objective of Document
17	AVOIDING DANGER FROM OVERHEAD POWER LINES	Soft copy	This guidance is for people who may be planning to work near overhead lines where there is a risk of contact with the wires, and describes the steps you should take to prevent contact with them. It is primarily aimed at employers and employees who are supervising or in control of work near live overhead lines, but it will also be useful for those who are carrying out the work.
18	Safety Posters for awareness of SPV and EPC employees	Soft copy	1. Camp Entrance safety posters
			2. Canteen related safety posters
			3. Office Entrance & Premises safety posters
			4. P&M, Workshop & Premises safety posters
			5. P&M, Plant area safety posters
			6. QA/QC Lab related safety posters
			7. Security Cabin related safety posters
			8. Store, storage related safety posters

Chapter – VI : Project Chainage wise Hot Spot Challenges:-

- **Chainage wise Village information**

Sr.No.	Villages and Ch. No.	Description
1	Vandalur (km 0/000 to km 1/280)	The ORR alignment starts from NH 45 at Vandalur (km 32/300) on NH 45. The Chainage of ORR at this point is designated as km 0/000. The starting point of ORR is just south of Vandalur railway station and opposite Arignar Anna Zoological Park, popularly called Vandalur Zoo. There are few auto spare parts shops and auto repair shops in this part of the alignment
2	Manniyakkam (km 1/280 to km 2/250)	In this village, the alignment of ORR passes on the foreshore of Vandalur lake to the east of a Government school and to the west of Ireniamman Nagar. The alignment crosses Wallajahbad- Vandalur Road this junction is at chainage km 32/300 of Wallajahbad - Vandalur Road.
3	Mudichur (km 2/250 to km 4/670)	In Mudichur, the ORR alignment passes through Amudham Nagar where tenpucca structure exist on the alignment. The alignment crosses Tambaram-Mudichur Road near the bund of Mudichur lake at chainage km 6/660 of Tambaram-Mudichur Road.
4	Varadharajapuram (km 4/670 to km 7/200)	The alignment runs east of Kishkintha Theme Park and crosses over River Adayar along the eastern boundary of Varadharajapuram village. The alignment also crosses Tambaram - Palanthandalam Road at km 7/180 of Tambaram - Palanthandalam Road
5	Erumaiyur (km 7/200 to km 8/325)	The ORR alignment in the village of Erumaiyur mostly passes through agricultural lands. There are no structures on the alignment in this stretch even though some mud roads cross the ORR alignment.
6	Palanthandalam (km 11/325 to km 2/230)	In this village, the alignment passes through vacant lands and also crosses three High Tension (HT) electrical lines. There is also a burial ground on the eastern side of the alignment.
7	Thirumudiyakkam (km 9/230 to km 10/690)	The ORR alignment passes between two existing units (Ramalingam Dairy Fresh & Amalgam Leather Industries) in the SIDCO Industrial Estate. The Thirumudivakkam - Pallavaram Road crosses ORR at km 10/130.
8	Kunnathur (km 10/690 to km 13/300)	The alignment passes on the western side of the Kunnathur Hill temple at a distance of 1.5 km from the temple. There are some coconut groves on the alignment. The SIDCO Road crosses ORR at km 10/990. A number of canals and mud roads cross the alignment in this stretch.
9	Kavanur and Venkatapuram (km 13/300 to km 14/000)	The ORR alignment passes on the eastern side of the Madha Engineering College in Kavanur village. The ORR alignment at km 13/340 near the MadhaEngineering College as can be seen is crossed by Kodambakkam - Kundrathur - Sriperumbudur Road. The garbage dumping yard of Kavanur village is situated on the ORR alignment as can be seen in Venkatapuram village, the burial ground is located on the western side of the alignment.
10	Kollacheri (km 14/000 to km 15/040)	In this village, a stone crusher and a transformer exist on the proposed alignment. Few canals cross the ORR alignment from km 14/270 to km 16/490.

Sr. No.	Villages and Ch. No.	Description
11	Malayambakkam and Nazarthpet (km 15/040 to km 18/950)	The villages of Malayambakkam and Nazarthpet are situated on the south and north respectively of the proposed alignment. In Nazarthpet village, two ponds, a burial ground, a Government Higher Secondary School, some mango plantations, godowns, factories and a number of huts are situated on the proposed ORR alignment The ORR alignment in Nazarthpet crosses NH 4 at km 19/640 of ORR and at km 22/000 of NH 4. It was observed during the reconnaissance survey that. in Nazarathpet Village, long stretches of earth in the alignment have been dug up and soil has been carted away for brick making. A number of ponds (probably pits used as brick earth quarries) exist in this stretch.
12	Varadharajapuram (Km 18/950 to Km 20/860)	In this village, the alignment passes through mostly agriculture lands. A pond is situated on the proposed alignment. The alignment has been dug up in a number of places for depth up to 4 to 5 m a couple of mud roads also cross the alignment.
13	Thukkanampattu, udayavarkoli and kolappancheri (Km 20/860 to km 22/460)	In these villages also, the alignment largely passes through agricultural lands. It may be noted that a major portion of the alignment is in Udayavarkoil village. There are some temporary huts and two brick chambers on the alignment. A portion of the burial ground is also situated along the ORR alignment. A metalled road crosses the proposed ORR at km 22/430.
14	Vayalanallur (km 22/462 to km 25/660)	in this section, the ORR alignment at chainage km 23/270 crosses a village road that connects Ariyappancheri with Vayalanallur. There are two brick chambers and a few huts on the alignment After the brick chamber, the alignment passes through low - lying agricultural lands. The alignment has been dug up and earth removed in a number of places The alignment crosses two minor roads, the Vellavedu - Poonamallee Road and the Pattabiram - Thirumazhisai Road. A few shops and a portion of burial ground are also situated on the alignment.
15	Amadurmedu and Karunakaracheri (Km 25/660 to km 28/000)	A pond is situated in the alignment at km 25/700. As in the earlier stretch, earth has been dug up to a depth of about 7 to 8 m in this stretch. The ORR alignment thereafter, crosses River Cooum at km 26/300. River Cooum at its origin is approximately 90 m wide and 5 m deep. A temple is situated within the ORR alignment at km 26/260. Thereafter the alignment passes through low-lying vacant lands. A small school building and two houses are also situated in the alignment.
16	Tandaral (km 28/000 to km 28/500)	After Karunakaracheri village, the alignment of ORR passes along the boundaries of Tandarai and Nemilicheri villages. The alignment also passes through Tandarai Lake near its edge.
17	Nemilicheri (km 28/500 to km 30/100)	The ORR crosses the Chennai-Bangalore railway line at km 28/560 in this village. The ORR alignment also crosses NH 205 at km 29/000 of ORR and km 64/300 of NH 205. It has been observed that there are a few pucca structures and a commercial complex on the western side of the alignment. A physiotherapy hospital is also situated on the alignment. Also, a burial ground is situated on the eastern side of the alignment. The alignment then passes through Thailapatti Lake on which there are about 100 encroached huts.

- **Chainage wise School/Hospital and Religious structures information**

Details Hot Spot in ROW (Detail Name of Hot spot)	Category (Cultural heritage[i], Historical Structures, Religious Structures, School, Intersections and underpass or any other such as weekly local Market)	Exact Location Chainage No./LHS /RHS	Status of Resettlement and rehabilitation	Remark / Photographs
Religious structures Information				
1	Nag Mata temple	2+050/RHS	In process	 Nag Mata temple
2	Temple	7+600 / LHS	In process	
School/Hospital Information				
2	Primary School	7+650/LHS	In process	
3	Polytechnic College	11+700/RHS	In process	Saint Michel Polytechnic College
4	Engineering College	2+ 700 /RHS	In process	Aleem Mohamed Saheb Engineering College
5	Engineering College	8+600 / RHS, LHS	In process	Vel's Engineering College and Hostel

- **Chainage wise water bodies information**

Sr. No.	Chainage (Km)	Water Bodies	Mitigation measures
1	1+ 750	Water Channel	1.No constructions plants are not allowed to site nearer to this water bodies 2. water should be drawn from these water bodies for construction activities and labour camp with proper consent from the local people of that region. 3. Silt fencing is required to prevent the excessive runoff from the construction site and labour camp. 4. proper utilization of oil interceptor is mandatory at this location.
2	4+900	Krishna Canel	
3	17+300	Water Streams	
4	17 + 600	Kandaleru Canel	
5	28+ 800	Kosthalayer River	
6	1+300 to 2+000	Pallavedu Lake	
7	2 + 150 to 2+ 200	Pond	
8	7+050 to 7+100	Pond	
9	11+500 to 11+700	Pond	

Summary of Mitigation for impacts on Water Environment:

Sr. No.	Particular	Impact	Reason	Mitigation/Enhancement
1	Loss of water bodies	Direct impact	Construction of CD structures across the water bodies	Care should be taken to minimize the land acquisition
2	Change of existing drainage patterns	Direct impact	Construction of cross drainage structure	Care should be given to maintain the natural drainage system
3	Water requirement for project	Direct impact	Water requirement for construction activities Water requirement for labour camp	Contractor needs to take consent from the local body and public for utilizing the local water resources
4	Increased sedimentation	Direct impact	Construction waste, Oil and diesel spills, Excessive runoff from the construction site	• Hazardous waste • (management and handling) to be enforced • oil interceptor will be provided at all construction sites. • Silt fencing nearer to the water bodies • No construction sites are planned nearer to existing water bodies • water bodies /resources along corridor

Hot spot control measures

CORR Ph II From 0+00 To 16+00 Km						
Chainage Wise Hot Spot Summary						
Sr. No.	Police Station	Hospital	School/ College	Mandir / Masjid	Patrol Pump	Police station
	Chainage	-	-	-	-	-
1	0+000 to 0+700	-	-	-	-	-
2	1+100 to 2+000	-	-	-	-	-
3	2+000	-	-	Yes	-	-
4	2+050	-	-	-	-	-
5	2+850	-	-	-	-	-
6	4+950	-	-	-	-	-
7	5 to 6	-	-	-	-	-
8	6 to 7	-	-	-	-	-
9	7 to 8	-	yes	-	-	-
10	8+600	-	-	-	-	-
11	9+500	-	-	-	-	-
12	10 to 11	-	yes	-	-	-
13	11+700	-	-	-	-	-
14	12 to 13	-	-	-	-	-
15	13 to 14	-	-	-	-	-
16	14 to 15	-	-	-	-	-
17	15+350 to 16+000				-	Yes

Police Station
Safety precautions at Hot Spots


Provision of Rumblers are ahead sign board


Provision of Do not overtake sign board

Provision of Speed limit 80 km / hr sign board

Provision of stop sign before hot spot zone.

Provision of Police station sign board

Hospital's
Safety precautions at Hot Spots

Provision of Hospital Ahead Sign Board


Provision of Rumblers are ahead sign board


Provision of Do not overtake sign board

Provision of Speed limit 80 km / hr sign board


Provision of Catties installed at padestrian crossing

Provision of stop sign before hot spot zone.


Provision of Solar Blinker before hot spot zone.

School / College =
Applicable preventive measures taken at hot spot location

Provision of School Ahead Sign Board


Provision of Rumblers are ahead sign board


Provision of Do not overtake sign board

Provision of Speed limit 80 km / hr sign board


Provision of Catties installed at padestrian crossing

Provision of stop sign before school zone.


Provision of Solar Blinker before school

Petrol Pump = Safety precautions at Hot Spots

Provision of Petrol pump sign board


Provision of Rumblers are ahead sign board


Provision of Do not overtake sign board

Provision of Speed limit 80 km / hr sign board


Provision of Catties installed at padestrian crossing

Provision of stop sign before school zone.


Provision of Solar Blinker before school

Details of Borrow Areas				
Sr. No	Location	Chainage	Remarks	Closer sataus
1	Palavedu	2+170 LHS		As per Govt. requirement increased pond depth .
2	Vellnaur	9+050RHS		As per Govt. requirement increased pond depth.
3	Puttur	13+975 RHS		As per Govt. requirement increased pond depth.
4	Alamathi	16+050 LHS		As per Govt. requirement increased pond depth.

Safety Control Measures at Hot Spot

Chapter – VII : Natural Resources

Minerals, Aggregates and Soil resource management

Land use Change and Loss of productive/top soil

- To the extent non-agricultural areas to be used as borrow areas
- Top soil to be preserved and laid over either on the embankment slope for growing vegetation to protect soil erosion.
- The Stockpile shall be designed such the slope does not exceed 1:2 (Vertical to horizontal) and the height of the pile will be restricted to 2m
- To prevent any compaction of soil in the adjoining productive lands, the movement of construction vehicles, machinery and equipment will restricted to corridor

The stored topsoil will be utilized for:

- Top dressing of the road embankments and fill slopes.
- Filling up of tree pits, proposed part of compensatory plantation.
- The contractor shall be responsible for working out haul roads with the minimal loss of productive soils, in consultation with the Supervision Consultants

Slope protection and Soil erosion due to construction activities, earthwork, and cut and fill etc.

- Prepare Construction schedule for bridges during non-monsoon season.
- Bio-turning of embankments to protect slopes.
- Slope protection by providing frames, dry stone pitching, masonry retaining walls, planting of grass and trees.
- The side slopes of all cut and fill areas will be graded and covered with stone pitching, grass and shrub as per design specifications.

Soil erosion at earth stockpiles

- The earth stockpiles to be provided with gentle slopes to prevent soil erosion.
- Retention wall/bund to be provided around the storage areas for excavated soil and other construction material to check the flow of solid with storm water in case of rain;

Borrow areas

- Non-productive, barren lands, upland shall be used for borrowing earth with the necessary permissions/consents from land owner and necessary local authorities.
- Depths of borrow pits to be regulated (should not more than 2 Meter).
- Topsoil to be stockpiled and protected for use at the rehabilitation stage.
- Silted/Sediment Lakes, Ponds should be selected as borrow area;
- Use of fly Ash should be done at embankments and other earth work to reduce the use of Borrow area

- Transportation of earth materials through covered vehicles.
- No Borrow area to be located within ROW
- IRC recommended practice for borrow pits (IRC 10: 1961).
- Borrow areas not to be dug continuously.
- To the extent borrow areas shall be sited away from habituated areas. Borrow areas shall be leveled with salvaged material or other filling materials which do not pose contamination of soil. Else, it shall be converted into fishpond in consultation with land owner/community. Rehabilitation of the borrow areas as per Guidelines for redevelopment of Borrow Areas.

Quarry Operations

- Aggregates will be sourced from existing licensed quarries only.
- Copies of consent/ approval / rehabilitation plan for a new quarry or use of existing source will be verified and their regular compliance to be checked.
- The quarry operations will be undertaken within the rules and regulations in force in the state.

Borrow Areas and Quarries Management Plan:

- The sources for borrow materials, metal quarry and sand quarry shall identified and samples should be tested to determine their suitability.
- Location of source of supply of materials for embankment of sub-grade and the procedure for excavation or transport of material shall be in compliance with the environmental requirements of the MoRTH and as specified in IRC:10-1961.
- The following precautions have to be taken
- To restrict unauthorized borrowing by the contractor No borrow area shall be opened without permission of the supervision Consultant.
- The borrowing shall not be carried out from cultivable lands, unless and until, it shall be agreed upon by the supervision consultant that there is no suitable uncultivable land in the vicinity for borrowing or private landowners are willing to allow borrowing on their fields.
- To avoid any embankment slippage, the borrow areas Will not be dug continuously, and the size and shape of borrow pits will be decided by the Supervision Consultant.
- Redevelopment of the borrow areas to mitigate the impacts will be the responsibility of EPC and Sub Contractor.
- Precautionary measures as the covering of vehicles will be taken to avoid spillage
- During transport of borrow materials. The unpaved surfaces used for the haulage of borrow material will be maintained properly.
- The haul roads and borrows areas will be managed and maintained. Since dust rising is the only impact along the haul roads sprinkling of water will be carried out twice a day along such roads during their period of use.

Borrowing of earth shall be carried out at location recommended as follows:

- **Non-Cultivable Lands:** Borrowing of earth will be carried out up to a depth of 2.0 m from the existing ground level. Borrowing of earth shall not be done continuously. Ridges of not less than 8m width shall be left at intervals not exceeding 300 m. Small drains shall be cut though the ridges, if necessary, to facilitate drainage. Borrow pits shall have slopes not steep than 1 vertical in 4 horizontal.
- **Productive Lands:** Borrowing of earth shall be avoided on productive lands. However, in the event of borrowing from productive lands, under circumstances as described above, topsoil shall be pressed in stockpiles. The conservation of topsoil shall be carried out. At such locations, the depth of borrow pits shall not exceed 45 cm and it may be dug out to a depth of not more than 30 cm after stripping the 15 cm top soil Aside. Elevated lands: at locations where private owners desire their fields to be levelled, the borrowing shall be done to depth of not more than 2 m or up to the level of surrounding fields.
- **Borrow Pits Along Roadside:** Borrow pits shall be located 5m away from the toe of the embankment.
- Depth of the pit should be such that the bottom of the pit shall not fall within an imaginary line of slope 1 vertical to 4 horizontal projected for the edge of the final section of the bank. Borrow pits should not be dug continuously. Ridges of not less than 8 m width should be left at intervals not exceeding 300 m. Small drains should be cut through the ridges to facilitate drainage.
- **Community/Private Ponds:** Borrowing can be carried out at locations, where the private owners (or in some cases, the community) desire to develop lands (mostly low-lying areas) for pisciculture purposes and for use as fishponds.
- **Borrow Areas Near Settlements:** Borrow pit location shall be located at least 1 km from villages and settlements. If unavoidable, they should not be dug for more than 30 cm and should be drained.

Compaction of soil due to movement of vehicles and equipments.

- Construction vehicles, machinery, and equipment to be stationed in the designated ROW to avoid compaction.
- Approach roads/haulage roads shall be designed along the barren and hard soil area to reduce the compaction.
- Transportation of quarry material to the dumping sites through heavy vehicles shall be done through existing major roads to the extent possible to restrict wear and tear to the village/minor roads.
- Damaged village roads/haul road should be restored immediately;
- Land taken for construction camp and other temporary facility shall be restored to its original conditions;
- Provision of dedicated path within the site for exclusive entry and exit of the construction vehicles;

Contamination of soil due to leakage/spillage of oil, bituminous and non bituminous debris generated from demolition and road construction.

- Construction vehicles and equipment will be maintained and refueled in such a fashion that oil/diesel spillage does not contaminate the soil.
- Fuel storage and refueling sites to be kept away from drainage channels/ water bodies (river, pond lakes, community water resources).
- Unusable construction demolition debris shall be dumped in ditches and low lying areas.
- Waste oil and oil soaked cotton/ cloth shall be stored in containers labeled 'Waste Oil' and 'Hazardous' sold off to MoEF/SPCB authorized vendors;
- Oil, grease, fuel and chemicals should be stored on concrete plat form with HDPE sheet,
- Non-bituminous wastes to be dumped in borrow pits with the concurrence of landowner and covered with a layer of topsoil conserved from opening the pit.
- Scarified bituminous should be milled and reused on embankment and other rural roads;
- Bituminous wastes will be disposed off in an identified dumping site approved by the State Pollution Control Board
- Soil quality monitoring to be under taken as per monitoring plan, SPCB, MoEF requirements

Contamination due to use of fly ash

- Use and disposal of fly ash as per fly ash notification.
- Fly ash to be used sandwiched between good earth layers after the proper approval from NHAI Consultant / Independent Engineer / NHAI PIU.

Water resource strategy

Construction water

Source the requirement of water preferentially from ground water but with prior permission from the concerned authority.

- Take all precaution to minimize the wastage of water in the construction process/ operation.
- Water intensive activities should not to be undertaken during summer period (April, May June)
- Monitor and Measure the Water

Alteration in surface water hydrology due to embankment

- Existing drainage system to be maintained and further enhanced.
- Provision of adequate size and number of cross drainage structures.
- Sections of the corridor to be raised suitably along flood prone areas with the cross drainage structures and adequate side drains to be built.

Siltation in water bodies due to construction activities/earthwork

- Bridge construction in non-perennial streams to be limited to the dry season.
- Silt/Sediment trap to be provided.
- Embankment slopes to be modified suitably to restrict the soil debris entering water bodies.
- Provision of Silt fencing shall be made at water bodies.
- Silt/sediment should be collected and stockpiled for possible reuse as surfacing of slopes where they have to be re-vegetated;
- Construction material and demolition waste of existing bridges etc shall be periodically removed and no material shall be stored at the river bed during monsoon or water flow in the rivers;
- Natural flow of the river should not be disturbed;
- Earthworks and stone works to be prevented from impeding natural flow of rivers, streams and water canals or existing drainage system.

Deterioration in Surface water quality due to leakage from vehicles and equipments

- No vehicles or equipment should be parked or refueled near water-bodies, so as to avoid contamination from fuel and lubricants;
- Oil and grease traps and fuelling platforms to be provided at re-fuelling locations.
- All chemicals and oil shall be stored away from water and concreted platform with catchment pit for spills collection;
- Construction material and other waste from river bed/ channel, other water bodies should be removed,
- Storage of material shall be away from the water bodies,
- All equipment operators, drivers, and warehouse personnel will be trained in immediate response for spill containment and eventual cleanup.
- Construction camp to be sited away from water bodies
- Wastes must be collected, stored and taken to approve disposal site only.
- Water quality shall be monitored periodically as per the requirement of SPCB/ MoEF/EIA.

Air Quality improvement

Climate and Air Quality

Site Project In-charge will

- Do Compensatory Plantation (1:3) and as per the guideline of Divisional forest department. Tree Plantation Guideline is attached
- Do the additional plantation on river banks, borrow areas and sensitive locations will also prevent deterioration of the local climatic conditions
- Avoid of use of wood as fuel in labor camps and Project site office etc.
- Make Provision of kerosene and/or LPG gas for cooking at labor camp;
- Do Plantation of pollutant absorbing trees at congestion locations and /or whenever applicable.
- Make Provision of junctions at major intersections and flyovers, ROB for congestion free movement of traffic as per Schedule-B of concession Agreement.

Dust generations due to construction activities and transport, storage and handling of construction materials.

- Site development during construction of Project office, Labor Camps, HMP, WMM, Crusher Plants, Stockyard etc.
- Transportation, loading and unloading of loose and fine materials through covered vehicles.
- Storage areas to be located downwind of the habitation area.
- All stockpiles to be covered while uncovered stockpiles and transfer points will be periodically water sprinkled to minimize fugitive dust generation.
- Dust generating activities to be avoided in conditions of high wind (particularly during summer season) and loose construction material to be covered at construction site
- Vehicle speed to be restricted to 15 km/hr at site, haul roads to minimize potential for dust generation in the surroundings
- Trucks/ dumpers to be covered by tarpaulin sheets during off site transportation of friable construction materials and spoil
- Water sprinkling on unpaved roads within the Proposed Project site and Haul road to avoid dust generation;
- Housekeeping of the area (Project site, Camp site, Labor camps, Stockyard, etc) to be maintained by deputing sweepers to remove dirt/debris from the floors/sites on daily basis
- Water sprinkling on earthworks, unpaved haulage roads and other dust prone areas at regular interval.
- Development of green belt around Crushers, and other Plants and Machineries
- Provision of PPEs to workers.

Emissions from vehicles, equipment and Machineries

- Regular maintenance of machinery and equipment
- Preventive Maintenance Schedule and All Machinery Should have it own History Sheet
- Ensure that all the vehicles entering the site will have valid PUC (Pollution under control) certificate; Idling should not be allowed. Machinery to be turned off when not in use
- Crusher, RMC Plant, asphalt mixing plants, CRMB Plant at downwind (1km) direction from the nearest settlement.
- All Plant and Machinery Such as Crusher, WMM, HMP, RMC, DG Set & CRMB Plant licensed by the Local Authority, SPCB and Factory Inspectorate shall be used.
- Diesel generators meant for emergency power supply to be regularly maintained so as to ensure that emissions from fuel combustion remain at design levels. Also to ensure stack height of 1.5 m above the roof level of the shed meant for diesel generators to meet the stack height requirement as specified by CPCB;
- Low sulphur fuel to be used for operation of DG set and other plants and machineries.

- Regular Ambient air quality and stack monitoring should be carried out as per the ACL –Environmental Monitoring Plan for Road Project, Camp sites, & Toll Plaza. ACL –Environment monitoring Plan for Air, Water, Soil and Noise is prepared

Noise from construction vehicle, equipment and machinery.

- All equipment to be timely serviced and properly maintained & carry out the preventive maintenance of machineries and vehicles.
- Bottlenecks to be removed, major intersections to be provided with interchange / flyovers as per schedule-B Concessions Agreement.
- Construction equipment and machinery to be fitted with noise silencers and maintained properly.
- Timing of noisy construction activities shall be done during night time and weekends when there are no activities by the sensitive receptor, concurrent noisy operations may be separated to reduce the total noise generated, and if possible re-route traffic during construction to avoid the accumulation of noise beyond standards. Else provision of temporary noise barrier at sensitive locations;
- Initiation of multi-layered plantation, to serve as mitigation option for operation phase
- Provision of rubber puddings/ noise isolators at equipment /machinery used for construction;
- Noise prone activities need to be restricted to the extent possible during night to reduce the noise impact. There is also requirement of providing make shift noise barriers surrounding the high noise generating construction equipment;
- Site workers working near high noise equipment to use personal protective devices to minimize their exposure to high noise levels;
- Honking restrictions near sensitive receptors;
- Noise monitoring should be carried our as per ACL Environmental Monitoring Plan
- In high noise area, use of Ear Plug / Ear Muff is compulsory.

Sr. No.	Particular	Impact	Reason	Mitigation/Enhancement
1	Meteorological factors and climate	Meager Impacts	Conversion of land in to paved surface	• Avenue of tree plantation
2	Dust generation	Short term	Site clearance activities, removal of trees and loading/unloading of construction material	• Sprinkling of water • Use of tarpaulin to cover the fine material • Construction plant will be installed in downwind direction
3	Gaseous pollutants	Long term	Construction plant, vehicles etc.	• All the vehicles should be warranted with Pollution under control certificate. • Proper maintenance of the vehicles.

Plantation

Forest & Plantation:

According to the Environmental Protection Act (enacted by MoEF, GoI), the entire linear stretches of roadside plantation along the state/national highways were declared as protected forest. Although the land is under the control of Public Works department, due to it protected status, approval of Central or State government for using the land for widening and rehabilitation must be granted. The above act was amended in 1980 in an attempt to check the rapid deforestation occurring throughout India. At the State level the Government was empowered to declare reserve and protected forest and was also given the authority to acquire land for extension and preservation of the forest. The Act was modified in 1998 by the MoEF. The spirit behind the act was conservation of natural forest and not strip plantation lost.
In case of the road side plantation, the clearance now may be given by the concerned regional offices of the MoE&F, irrespective of the area of plantation lost. While issuing the approval, the normal provision of compensatory afforestation, it stipulates a condition that for every tree cut at least two trees should be planted.

Flora and Fauna :

- The trees to be cleared in course of construction should be replaced by double in number.
- Species suitable to the locality and climate should be planted.
- Two-year-old seedlings of fast growing species are chosen. Advance plantation prior to the road construction will help in establishment of the plantations. The species like *Mangifera indica, Azadirachta indica, Acacia auriculiformis, Ficus bengalensis, Ficus religiosa* etc should be planted. The budget for such afforestation should be provided.
- Multi row planting should be encouraged than single row. The vegetal cover along the row near to the settlements should cover at least 10 meters both sides.

Plantation

- Depending on the availability of Right of way, plantation pattern should be as follows:
- 1. The first row along the highways will be of small to medium sized ornamental trees.
- 2. Subsequent rows,depending on the availability of width, will comprise of ornamental and or shade bearing species of more height than those in the first row.
- 3. planting of dwarf shrub in the median, provide glare free travel to the road user during night time.
- 4. Planting of herbaceous species are ground cover in the median , special landscape and the embankment slopes.
- 5. Turfing with grass in the median , special landscape and embankments.

Tree plantation on the road side:

- The first and second row of plantations along the highway, except the last row , should be worked out based on the land availability of the RoW along the various sections. Following are recommended species for Roadside plantation :

Sr. No.	Soil	Botanical Name	Local Name	Flowering month/Colour
1	Normal loamy soil	*Acacia auriculiformis*	Vilayati babool	Sep-Oct/yellow
2		*Bauhinia Sps*	Kachnar	Femar/pink
3		*Cassia fistula*	Amaltas	May/Yellow
4		*Cassia nodusa*	Cassia	May-june/pink
5		*Delonix regia*	Gulmohar	May/yellow
6		*Jacaranda mimosarfolia*	Jacaranda	April/blue
7		*Peltophorum ferrugineum*	peltophorum	Oct/yellow
8	Water logged areas	*Cordial dictma*	lasoda	
9		*Syzygium cumini*	Jamun	
10		*Terminalia arjun*	Arjun	
11	Alkaline soils	*Albizzia lebbek*	Kalasiris	
12		*Pongamia pinnata*	Kanji	
13		*Terminalia arjun*	Arjun	

Species recommended for second and Subsequent row:

Sr. No.	Soil	Botanical Name	Local Name
1	Normal Loamy Soil	*Albizzia lebbek*	kalasiris
2		*Pongamia pinnata*	kanji
3		*Terminalia arjun*	Arjun
4		*Malia azadiracta*	Bakain
5		*Dalbergia sissoo*	Shisham
6		*Gravilea robusta*	Silver Oak

Chapter – VIII : Environment Monitoring / Water Testing

The project site Environmental performance is monitored, measured and verified by the Govt. approved and accredited Environmental Laboratory. Every quarter, the Environmental Analysis (Water, Air & Noise) has been carried out at our Project Site.

Environmental Monitoring Plan for Toll Plaza, Road & Bridge Project

Sr.No	Description of Parameters	Schedule and duration of monitoring
	1. Ambient Air Quality (SPM, RPM, CO, SO_2, NOx)	
1A	During construction phase , In the project camp boundry Four Samples from South, North, East and west sides One sample near admin and project office.	Over 24 hours continuous duration, Frequency :- quarterly basis Total five samples
1B	During construcion phase & operation phase, Village, Urban area, Signal etc	Over 24 hours continuous duration, Frequency :- quarterly basis One Sample
1C	During operation phase At Toll plaza surrounding area	Frequency :- quarterly basis One sample
1D	During operation phase At Suitable Intersection	Frequency :- quarterly basis One sample
	2. Ambient Noise	
2A	During construction phase , In the project camp boundry Four Samples from South, North, East and west sides One sample near Admin and proejct office.	Over 24 hours continuous duration, Frequency :- quarterly basis Total five samples
2B	During construcion phase & operation phase, Village, Urban area, Intersection (Signal) etc	Over 24 hours continuous duration, Frequency :- quarterly basis One sample
2C	During operation phase At Toll plaza surrorunding area	Quarterly basis - One sample
2D	DG Set (Above 50 KVA)	Quaterly basis - One Sample
2E	During construction phase , Crusher	Quaterly basis - One Sample
2F	During construction phase , HMP Plant	Quaterly basis - One Sample
2G	During construction phase , WMM Plant	Quaterly basis - One Sample
2H	During construction phase , RMC Plant	Quaterly basis - One Sample
2I	CRMP Plant	Quaterly basis - One Sample

3. Stack Monitoring (PM, CO, SO_2, NOx) During construcion phase ,		
3A	DG Set (Above 50 KVA)	Quaterly basis - One Sample
3B	Hot Mix Plant - Stack	Quaterly basis - One Sample
4. Water quality (pH, Odour, TDS, TSS, O&G, Sulphide, Sulphate, COD, BOD and O&G, Heavy Metals etc) During construction phase ,		
4A	RMC Waste water and Treated water	Quaterly basis- One Sample
4B	Down stream of Camp-Leachet	Quaterly basis - One Sample
5.Drinking Water quality as per WHO Standard, During construcion phase, During construcion phase		
5A	Labour camp	Monthly basis - One Sample
5B	Project camp and Office	Monthly basis - One Sample
6.Soil Quality (pH, Alkalinity, Acidity, Sulphite, C, N, P, K etc) During construcion phase		
6A	Labour camp	Half yearly - One Sample
	Project camp and Office	Half yearly - One Sample

Air Quality Monitoring Location

Sr. No.	Chainage (Km)	Location
1	0.000	Nimillincherry
2	3.000	Palavedu
3	5.000	Mittanamalle
4	8.000	Morai
5	13.000	Attanthngal

Consultancy Details for Environmental Monitoring

Mitra S. K. Private Limited
Shrachi Centre - 5th. Floor, 74B, A. J. C. Bose Road,
Kolkata - 700 016, West Bengal, India
Phone : 91-33-2265 0006 – 07 / 4014 3000
Fax : 91-33-2265 0008
E-mail : info@mitrask.com
http://www.mitrask.com

Chapter – IX : Safety Performance

PPE Matrix :

ASHOKA

Ashoka Concessions Ltd, Nasik

PPE Matrix for Road & Bridge Construction Worker

Personal Protective Equipment	Working Location details	Life of PPE	IS Code	Approx Prices in Rs
Safety Helmet	Is compulsory for all working activities	One & half year	IS:2925-1984	200- 350
Safety Shoes	Is compulsory for all working activities	One & half year	IS 1989 –1 986 (Pt.2)	350- 750
Reflective Vest	Is compulsory for all working activities	Three Months		150- 300
Dust Mask	Is compulsory for Crusher, WMM, HMP. CRMB and RMC Workers and employees	Ten Days	IS 9473 – 2002	15- 65
Ear Plug	Is compulsory for Crusher, WMM, and HMP. CRMB, RMC and DG Set Workers and employees	Ten Days	IS 9167 – 1979	10-70
Ear Muff	is compulsory if Noise Level is high greater than 85 dB	Two Year	IS 9167 – 1979	350- 1250
Safety goggle	Is compulsory for Crusher, WMM, and HMP. CRMB, RMC and DG Set Workers and employees	Six Months	IS 8940 – 1978 / IS 1179 – 1967	150 - 350
Cotton Coverall / Dungaree	Petrol pump operator and fuelling operator	One year	IS 8519 – 1977	350 - 500
Hand Gloves	Store Person- Cotton Hand Gloves for Bitumen & Concrete laying – Rubber Hand gloves For Electrical work – Shock proof Hand gloves For Welding Work – Heat proof	Ten Days Six Months One Year One Year	IS 4770 – 1968 / IS 2573 – 1986/ IS 6994 – 1973 part I	10 – 25 30 – 60 150-450 100- 200
Gumboot (Thermal Proof)	Is compulsory for Bitumen & Concrete laying (Gumboot -Heat proof activity and Concreting activity Rubber-gumboot)	Six Months		300 - 500
Welding Glass	Is compulsory for all welding and cutting activity	One year	IS 8940 – 1978 / IS 1179 – 1967	150- 300
Full Body Harness	Is compulsory for working at height above 1.8 M Should be compulsory for Bridge workers who are working at height.	Two Years	IS 3521 – 1999	750 – 1250

Note: - After Issuing the PPE to worker/staff , Self declaration letter should taken from worker/Staff. If Employee/staff/worker found without PPE'S at work zone area or during the working, He will be penalised and warning letter will be issued immediately. Warning letter format is enclosed herewith.

Anilkumar Shimpi
Prepared, Checked and recommended By

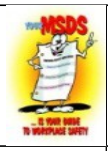
Ashish Kataria
Approved By

Tool Box Talk Form :

Date:	Conducted By :
Project Name:	Location:

Points Discussed :	Job Related Problem Areas/Concerns :
…… …… …… …… …… ……	…… …… …… …… …… ……

election of topic by tick (√):

											
Excavation	Concrete Work Safety	Work With Moving Equipment	Electrical Safety	PPE Matrix	Working At Height	Safety Precautions Of Driving	Work Place Monitoring (Slips And Falls)	Material Safety Data Sheet	Preventive Maintenance Of Vehicles	Material Handling Safety	Flagging Traffic at Work / Flagman Work
(√)	(√)	(√)	(√)	(√)	(√)	(√)	(√)	(√)	(√)	(√)	(√)

											
Road Barricading And Signage's	Welding Work Safety	Working Near Overhead Lines	Road Maintenance Work	Incident / Accident Reporting	Crane Safety	Lifting & Carrying Safety	Emergency Preparedness	Fire Extinguishers Use	Prevent Oil / Chemical Spillage	5 S System	General First Aid Treatment
(√)	(√)	(√)	(√)	(√)	(√)	(√)	(√)	(√)	(√)	(√)	(√)

Attendees:

Sr. No.	Name of Employee	Designation	Sign
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			

Sign of Area Incharge / Supervisor **HSE Officer** **Section Incharge**

HSE Training

Training are given to employees on various aspects of Environment, Safety and Health. Various training modules are prepared and Training are given as per the training calendar prepared by site safety supervisor and corporate HSE Team

List of Training Modules

Sr. no.	Training Topic
1	ROAD WORKER SAFETY DURING WORKING (Hindi Version) DVD DuPont Sustainable Solution
2	LEADER'S GUIDE & POWERPOINT DVD DuPont Sustainable Solution
3	COMMERCIAL DRIVER CERTIFICATION A License To Drive - (Hindi Version) DVD DuPont Sustainable Solution
4	SAFE DRIVING Real, Real – Life - DVD DuPont Sustainable Solution
5	DEFENSIVE DRIVING A Crash Course (Hindi Version) DVD DuPont Sustainable Solution
6	PRO-ACTIVE SAFETY ATTITUDES Looking Out For Number One (Hindi Version) DVD By Coastal safety solutions
7	CONTRACTOR SAFETY General Requirements (Hindi Version) DVD By Coastal safety solutions
8	SAFETY ORIENTATION It Takes a Winning Attitude (Hindi Version) DVD By Coastal safety solutions
9	AWARENESS ON FIRE, FIRE EXTINGUISHERS By CASEFIRE INDUTRIES LTD
10	BREATH OF AIR By VENUS SAFETY & HEALTH PVT.LTD.
11	HSE for Sustainable Growth National Safety Council
12	ESMS:- Standard Operating Procedure ESSMS:- Environment Safety and Social Management System
13	FIRE FIGHTING, RESCUE, SAFETY AND PPE's BY FOREMOST TECHNICO PVT LTD.
14	CONVEYOR SAFETY 1. General Type 2. Safe Operating Procedure 3. Operating Precautions
15	CRANE OPERATING SAFETY PRECAUTIONS
16	5S AWARENESS TRAINING PROGRAMME
17	ELECTRICAL SAFETY AWARENESS TRAINING
18	EMERGENCY RESPONSE PLAN
19	FIRE EXTINGUISHERS AND ITS USE
20	FIRST AID ON ROAD ACCIDENTS
21	AWARENESS ON HIRA
22	TRAINING PROGRAMME ON MSDS
23	SAFETY PRECAUTIONS AT WORK ZONE
24	QHSE MANAGEMENT SYSTEM
25	TRAINING ON MACHINE GAURDING
26	GENERAL SAFETY RULES AND USE OF PPE
27	ENVIRONMENTAL IMPACTS OF CONSTRUCTION ACTIVITY AND SITE CONTROL PRACTICES
28	WORKING AT HEIGHTS
29	SAFE STORAGE AND HANDLING OF GAS CYLINDERS
30	Monsoon Safety Tips
31	IFC HSE Management Systems
32	Environmental Aspects of Construction

IDLH / HIRA and Control Measures

ASHOKA BUILDCON LTD, ASHOKA HOUSE, ASHOKA MARG,ASHOKA NAGAR, NASHIK – 422 011			
Health, Safety and Environment Work Instructions			
Doc. No.: FR/CO/DO/PR/HSE/03	REF.: WI/CO/DO/PR/HSE/27		Pages : 1 of 1
Issue No: 02	Issue Date:1st Aug, 2013	Rev. No.: 00	Revision Date : 1st Aug, 2013
Title : Hazard Identification, Risk Assessment and determining controls (Risk Register)			
SITE:	Road Project		

Sr. No.	Dept/ Area	Activity	Hazard	RISK RATING				Control /Remark /SOP
				S	P	Risk Level	Significance	
1	Store	Diesel Store Yard	Fire / explosion	4	3	12	Moderate	SOP No.33
2	Store	Computer Operating	Electric shock due the current leakage	3	2	6	Low	SOP No. 23
3	Store	Storage of Diesel	Fire explosion	4	3	12	Moderate	SOP No. 43
4	Store	Transporting -Internal Truck & dumper	Trap / engulfment	4	3	12	Moderate	SOP No.30
5	Store	Shuttering stacking	Trap / Struck	2	2	4	Low	
6	Store	Cement Bag Stacking	Trap / Engulfment	3	2	6	Low	
7	Store	Consumable Items Stacking	Trap / engulfment	3	2	6	Low	
8	Store	Waste Oil Separation & Storing	Fire / explosion	4	3	12	Moderate	SOP No.34
9	Store	Office work - Office chair & table	Back pain	3	3	9	Low	SOP No.02
10	Store	Office work - Continuous working on Computer	Visual defect - Radiation Hazard	3	3	9	Low	SOP No. 38
11	Q. C. LAB	Testing, usage of chemicals	Inhalation of gases/ vapors	3	2	6	Low	Use of Chemical Mask while Working
12	Q. C. LAB	Handling of cubes	Fall of objects / Body Injury	3	2	6	Low	SOP No. 02
13	Q. C. LAB	Aggregate Test / Soil Test	Exposure of Dust	3	2	6	Low	Use of Proper PPE (Dust mask, Goggle)
14	Q. C. LAB	Bitumen Test	Exposure of Gas / Dust	3	2	6	Low	Use of Chemical Mask while Working
15	Q. C. LAB	Sample Collection from side	Trap / Struck / Fall hazard	3	2	6	Low	
16	Q. C. LAB	Storage of Chemical	Fall /skin irritation due to Leakage	3	2	6	Low	
17	Q. C. LAB	Working on the CBR Machine	Exposure of High Noise / Vibration	3	2	6	Low	Use of Proper PPE (Ear plug / muff if needs)
18	Q. C. LAB	Heating of Chemical & material on Hot plate	Exposure of Heat	3	2	6	Low	
19	Q. C. LAB	Handling of Benzene & Flammable Chemicals in Laboratory	Fire / Explosion	3	3	9	Low	SOP No.28, Follow MSDS
20	Q. C. LAB	Bitumen dry material	Inhalation / skin irritation	3	2	6	Low	
21	Q. C. LAB	Handling Bitumen Cube	Burn / Injury	2	2	4	Low	
22	HR & Admn.	Office work - Office chair & table	Back pain	3	3	9	Low	SOP No.38
23	HR & Admn.	Office work - Continuous working on Computer	Visual defect - Radiation Hazard	3	3	9	Low	SOP No.38
24	HR & Admn.	Travelling for Out Duty	Accidents	3	3	9	Low	SOP No. 31
25	Canteen	Cooking (Leakage of Gas)	Fire Hazard	3	2	6	Low	Adequate Ventilation
26	P & M	Running of DG Set	Exposure of High Noise	3	3	9	Low	SOP No.38
27	P & M	working at height	Fall Hazard	4	3	12	Moderate	SOP No.5
28	P & M	Electrical maintenance	Slip, Trips & falls, electric shock from electrically operated machines	4	3	12	Moderate	SOP No.24
29	P & M	Maintenance of machines	Minor injury while working with un guarded machines	2	2	4	low	SOP No.10
30	P & M	Vehicle movement (Truck, Dumper, Excavator, Earth movers)	Serious accident while the movement	4	3	12	Moderate	SOP No.16
31	P & M	Material handling Loading / Unloading Process	Falling of material,	4	2	8	low	SOP No.03
32	P & M	Cutting and Welding Operation	FIRE HAZARD	4	3	12	Low	SOP No.23
33	P & M	Cutting and Welding Operation	Electric Shock / gas inhalation/Radiation	3	3	9	Low	SOP No.27
34	I T	Installation of system and maintenance	Electric Shock	3	2	6	Low	
35	I T	Programing and support	Visual defect - Radiation Hazard	3	2	6	Low	
36	I T	Refilling of ink in cartridge	Exposure to Ink	2	2	4	Low	
52	Milling machine	Scratch for exiting road	object from machine	2	2	4	Low	
54	SURVEY	Working along the road site	Struck Hazard	2	3	6	Low	OHSMP No.1
55	SURVEY	Movement on road for Survey	Struck hazard	2	3	6	Low	
56	EQA	Tree Cutting	Falling/ Engulfment	2	2	4	Low	
57	EQA	Wood Transportation	Struck and Trip Hazard	2	2	4	Low	
58	EQA	Excavation	Slippery	2	2	4	Low	SOP NO. 9
59	EQA	Excavation	Cave inn /collapse of sides	2	2	4	Low	Benching or shoring should be provided
60	EQA	Excavation	Radioactive, gases, Vapors	2	2	4	Low	
61	EQA	Concerting	Mechanical	2	2	4	Low	
62	EQA	Loading/unloading of cements	Inhalation of dust particles	3	3	9	Medium	OHSMP No.1
63	EQA	EXCAVATION	Falling of person under the pits, minor injury, injury requiring first aid	2	2	4	Low	SOP NO. 9
64	EQA	Shuttering	Trap hazard	2	2	4	Low	
65	EQA	Centering	Slippery	2	2	4	Low	
66	EQA	Shifting Material	Machine Breakdown	2	2	4	Low	
67	EQA	Concreting	Slippery	2	2	4	Low	
68	EQA	Convency	Firing	2	2	4	Low	

69	EQA	Work at height	Fall of person	2	2	4	Low	safety belt / safety helmet / safety net etc.
70	EQA	Crane installation	Fall down material	3	2	6	Low	
71	EQA	Material handing	Friction / cuts	2	2	4	Low	Hand gloves
72	EQA	scaffolding fixing	Spelt hand	3	2	6	Low	
73	EQA	Diversion	Roads Accidents	3	2	6	Low	Solar Blinker for night .
74	EQA	RE - Wall fixing	Accidents	3	2	6	Low	Fixing for wood box with nut bolts & supports wooden bel-lies.
75	EQA	H.D.P Pipe work waterline	Fire	2	2	4	Low	Provide fire Extinguisher site security.
76	HOT MIX PLANT	Bitumen unloading	Fire (Due to static Electricity)	2	3	6	Low	
77	HOT MIX PLANT	Bitumen Heating in the tank	Fire (Due to the over heating & leak-age))	3	2	6	low	
78	HOT MIX PLANT	Supply of Electrical energy	Short circuit due electrical appliances	4	2	8	Low	
79	HOT MIX PLANT	Inspection & Routine Maintenance	Falling from Height	4	2	8	Low	SOP NO.5
80	HOT MIX PLANT	Loading of Hot mix	Exposure of Heat	4	2	8	Low	
81	LABORAT-ORY	Test Soil Density Gauge	Radiation (NDT Machine)	2	2	4	Low	

Risk Matrix							
Severity	High	4	4	8	12	16	20
		3	3	6	9	12	15
		2	2	4	6	8	10
		1	1	2	3	4	5
	Low	0	1	2	3	4	5
	Low						High
	Probability						

Colour Code	Rating	Risk Level
High	16 to 20	HIGH IMPACT RISK – Must implement extensive risk controls.
Moderate	10 to 15	MODERATE RISK – Conduct formal risk analysis; may require risk controls
Low	< 9	LOW RISK – Some risk controls may still be justified

Environmental Aspect Impact and Control Measures

ASHOKA BUILDCON LTD, ASHOKA HOUSE, ASHOKA MARG,ASHOKA NAGAR, NASHIK – 422 011			
Health, Safety and Environment Work Instructions			
Doc. No.: FR/CO/DO/PR/HSE/01	REF.: WI/CO/DO/PR/HSE/28		Pages : 1 of 1
Issue No: 02	Issue Date:1st Aug, 2013	Rev. No.: 00	Revision Date :
Title : Identification of Environmental Aspects and Impacts and control significant impacts (Environment Aspects register)			
SITE			Road Project

Sr. No	Dept/ Area	Activity	Aspect	Direct / Indirect D/I	Impact	Condition	Rating						Significance	Control Measures
							A	B	C	D	E	F		
							Legislation	Impact	Occurrence	Control	Detection	F=BxCxDxE		
1	HR/AD-MIN	House Keeping	Dust Inhalation	I	Air Pollution	N	N	1	2	1	1	2	Low	Chapter No.06 _ Environment Management Manual for RMC Manual Water sprinkling system provided
2	HR/AD-MIN	Urinal Facility	Biodegradable waste generation	I	Water Pollution and Land Contamination	AN	N	2	1	1	1	2	Low	SOP No. 44
3	HR/AD-MIN	Depositing of Biodegradable waste	Biodegradable waste generation	D	Contamination of land and water	N	N	1	2	1	1	2	Low	SOP No. 44
4	HR/AD-MIN	Usage of Electricity	Usage of Natural Resources	D	Resource wastage	N	N	1	2	1	1	2	Low	Energy Saving Tips
5	EQA	Concreting	Generation of Cement Dust	I	Air Pollution	N	NA	1	2	1	1	2	Low	Chapter No.06 _ Environment Management Manual for RMC Manual Water sprinkling system provided
6	P & M	DG Set Running	Generation of Noise	D	Noise Pollution	N	Y	1	3	2	1	6	HIGH	Chapter N.7, Environment Management Practices / DG Set kept at isolated area, with lock & key
7	P & M	Transportation of vehicles	Generation of Noise	D	Noise Pollution	N	Y	1	3	2	1	6	HIGH	Chapter N.7, Environment Management Practices- Noise Level Management
8	P & M	Drilling / Cutting	Fumes and Sound generation	D	Noise Pollution	AN	NA	1	2	1	1	2	Low	Chapter N.7, Environment Management Practices- Noise Level Management
9	P & M	Welding, Gas Cutting	Fumes and Sound generation	D	Air Pollution	N	NA	1	1	2	1	2	Low	
10	P & M	Preventive Maintenance	Usage of Oil, Diesel	D	Land Contamination	N	YES	2	1	1	2	4	HIGH	Disposal through Authorized Dealer
11	P & M	Running of RMC Plant : Loading of Aggregate to Feeding point by Dozen	Generation of Dust	D	Air Pollution	N	YES	2	1	1	1	2	HIGH	SOP No. 45
12	P & M	Running of RMC Plant : Loading of Aggregate to Feeding point by Dozen	Generation of Noise	D	Noise Pollution	N	YES	2	1	1	1	2	HIGH	
13	P & M	Running of Conveyor Belt Manufacturing of RMC-	Generation of Dust	D	Air Pollution	N	NA	2	1	1	1	2	Low	Chapter No.06 _ Environment Management Manual for RMC Manual the conveyor belt is completely covered)
14	P & M	Diesel Distribution	Leakages, Spillages	D	Land Contamination	AN	N	2	1	1	1	2	Low	
15	P & M	Depositing of Non-bio-degradable waste	Electrical wastages, wire pieces etc.	D	Contamination of land and water	N	N	2	1	1	1	2	Low	
16	P & M	D.G. Set Chimney Operation	Chimney height, air pollution	D	Smoke Emission (Air Pollution)	N	N	1	2	1	1	2	Low	
17	P & M	Maintenance work	Wastage after the maintenance such as Oil soak cotton waste, Engine oil container	D	Land Contamination	N	Y	1	2	1	1	2	Low	Disposal through Authorized Dealer

18	P & M	Maintenance work	Waste Oil generation	D	Land Contamination	N	Y	1	2	1	1	2	Low	Disposal through Authorized Dealer
19	P & M	Transportation of RMC by TM	Dust generation	D	Air Pollution	N	N	1	4	1	2	8	High	EMP. No. 5
20	P & M	TM Cleaning	waste water generation	D	Water pollution	N	Y	1	4	1	2	8	High	As EMP No 1 conventional treatment was fail due to this New EMP No.4
21	P & M	Vehicle Movement	Dust generation	D	Air Pollution	N	N	1	4	1	2	8	High	Chapter No.06 _ Environment Management Manual for RMC Manual Water sprinkling system provided
22	RMC-Operation	Manufacturing of RMC- Transportation of Aggregate by Dumper	Generation of Dust	D	Air Pollution	N	NA	2	1	1	1	2	Low	Chapter No.06 _ Environment Management Manual for RMC Manual Water sprinkling system provided
23	RMC-Operation	Manufacturing of RMC- Transportation of Aggregate by conveyor belt	Generation of Dust	D	Air Pollution	N	NA	2	1	1	1	2	Low	Chapter No.06 _ Environment Management Manual for RMC Manual the conveyor belt is completely covered)
24	RMC-Operation	Manufacturing of RMC - Feeding of cement	Generation of Dust	D	Air Pollution	N	NA	2	1	1	1	2	Low	Chapter No.06 _ Environment Management Manual for RMC Manual Water sprinkling system provided
25	RMC-Operation	Manufacturing of RMC - Washing of RMC Plant	Generation of waste water	D	Water Pollution	N	Y	2	2	1	1	4	Low	EMP. No. 1
26	RMC-Operation	Use of Admixtures	Generation of Empty barrels of Admixture	D	Land Contamination	N	Y	1	2	1	1	2	Low	Sending to Authorized Dealer
27	RMC-Operation	Use of Cement Bags	Generation of waste cement bags	D	Land Contamination	N	N	1	2	1	1	2	Low	Clean it is ETP Area, Reuse for store/ sending it to authorized person
28	ROAD MAINTENANCE	Repair Work of Block & Panel Crack	Dust Inhalation	I	Air Pollution	AN	N	2	1	1	1	2	Low	
29	ROAD MAINTENANCE	Concreting	Damage of top Soil	D	Land Contamination	N	N	2	1	1	1	2	Low	
30	STORE	Storage of Chemicals	Leakages, Spillages	I	Land Pollution	AN	YES	3	1	1	1	3	Low	Chapter No. 10 _Environment Management Manual for RMC Manual (Selling to Authorized vender)
31	STORE	Storage of Cement Bags	Generation of Dust	D	Air Pollution	N	YES	2	1	1	1	2	Low	
32	STORE	Transporting	Dust generation	D	Air Pollution	AN	NA	2	1	1	1	2	Low	Chapter No.06 _ Environment Management Manual for RMC Manual (Vehicle Movement)
33	STORE	Transporting	Use of Natural Resource	I	Air/ Natural Resource	N	NA	1	1	1	1	1	Low	
34	STORE	Storage of Diesel	Spillage of diesel	I	Air, Land	N	NA	1	2	1	1	2	Low	Chapter No. 10 _Environment Management Manual for RMC Manual (Selling to Authorized vender)
35	STORE	Cement Loading/Unloading	Generation of Dust	I	Air, Land	N	NA	1	2	2	1	4	Low	
36	STORE	Diesel Distribution	Leakages, Spillages	D	Land Contamination	AN	NA	1	2	1	1	2	Low	
37	STORE	Storage of LPG cylinders	Leakages, Spillages	D	Air Pollution	E	NA	2	1	1	1	2	Low	
38	STORE	Diesel storage	storage	D	Plant & Machinery.	N	Y	2	1	1	1	2	Low	Chapter No. 10 _Environment Management Manual for RMC Manual
39	STORE	Usage of paper	Improper & unplanned paper consumption	D	Resource wastage	N	N	1	1	1	1	1	Low	
40	STORE	Usage of Electricity	Consumption of Energy	D	Resource wastage	N	N	1	1	2	1	2	Low	

Memorandum :

ASHOKA CONCESSIONS LTD, ASHOKA HOUSE, ASHOKA MARG,ASHOKA NAGAR, NASHIK- 422011			ASHOKA
Health, Safety and Environment Work Instructions			
Doc. No.: ABL/FR/CO/DO/PR/HSE/12	REF.: WI/CO/DO/PR/HSE/23		Pages: Page 1 of 1
Issue No: 01	Issue Date: 4th Jan, 2014	Rev. No.: 00	Revision Date : 4th Jan, 2014
Title : Violation Letter			

MEMORANDUM

PROJECT: - Memo. No:

Department:

CONTRACTOR/A.B.L.: Date: Time: Ch. No:

NAME OF EMPLOYEE:

DESIGNATION/TRADE:

MEMORANDUM NO: (A) 1st [ ] (B) 2nd [ ] (C) 3rd [ ] (D) 4th [ ]

TYPE OF VIOLATION (To be Written by HSE Officer):-
(HSE Officer shall attach the evidence of violence such as photograph and IOC issued)

- **Not using the following PPE on duty time.** (Use {√} mark as proper violence option below.)

1) SAFETY JACKET. ☐ 2) SAFETY HELMET. ☐ 3) NOSE MASK. ☐ 4) SAFETY SHOES. ☐
5) HAND GLOVES. ☐ 6) GOGGLES. ☐ 7) EAR PLUG. ☐
8) RUBBER HANDGLOVES ☐
9) WELDING SCREEN. ☐ 10) SAFETY BELT. ☐ 11) GUMBOOT. ☐

- **Any other violence :-**

- **Department Head action against the violator:-**

Sign of employee Sign. Of DH/ Supervisor Sign of HSE Officer Sign of Project In charge

HSE & S and HR & Admin. Department

Head HSE & S Comments:-

DGM (HR & Admin.) Comments:-

IMS Director Comments:-

1st Violation – Warning and information for employee personal file.
2nd Violation – Counseling by project in charge/safety committee.
3rd Violation – Will be treated as monetary loss one day.
4th Violation – Will be treated as suspension letter or final counseling by IMS director.

I. It should be against the Risk Register, Environmental Impact Register, Risk is IDLH (immediate danger to life and health) and legal requirement.
II. Site HSE Officer should write a report and after comments from DH and project in charge should sent to head HSE & S and DGM - HR & Admin.

MASTER COPY
ONLY IF IN RED

Management Representative	
Issued By	

Incident Reporting :

ASHOKA BUILDCON LTD, ASHOKA HOUSE, ASHOKA MARG,ASHOKA NAGAR, NASHIK –422 011			ASHOKA
Health, Safety and Environment Work Instructions			
Doc. No.: FR/CO/DO/PR/HSE/08	REF.: WI/CO/DO/PR/HSE/32		Pages. 1 of 1
Issue No: 02	Issue Date:1st Aug, 2013	Rev. No.: 00	Revision Date : 1st Aug, 2013
Title: Incident / Accident Investigation Report			

"Incident " Report

Name of Project:-		Report No.:
Location:		Date:

Description of the Incident /Accident /Near miss: (Explain what happened -Attach Incident photographs and Use attachment such as sketch if necessary)

Reported By:	Signature:	Time of incident:		Date:

Estimate of Loss Potential (What injuries / losses might have occurred.)

Injuries: -
Property / Equipment Damage:
Environmental Damage: --
Others: -

IMMEDIATE CAUSES				BASIC CAUSES	
1. SUBSTANDARD ACTS/PRACTICES		**2. SUBSTANDARD CONDITIONS**		**3. PERSONAL FACTORS**	
A. Operating equipment without authority		A. Inadequate guards or barriers		A. Capability	
B. Failure to warn / secure / barricading		B. Defective tools, equipment, substances		B. Lack of Knowledge	
C. Operating / working at improper speed		C. Inadequate tools, equipment, substances		C. Lack of Skill	
D. Defeating / removing a safety device		D. Poor access		D. Stress	
E. Using defective equipment		E. Inadequate warning system or notice		E. Motivation	
F. Using equipment improperly		F. Fire and explosion hazards		**4. JOB/SYSTEM FACTORS**	
G. Failure to use PPE properly		G. Substandard housekeeping		A. Inadequate Leadership	
H. Improper loading or positioning		H. Hazardous gases, dust, fumes		B. Inadequate Engineering	
I. Improper lifting/loading/Material Handling		I. Excessive noise		C. Purchasing	
J. Improper replacement/position for task		J. Radiation exposures / Extrem Tempeture		D. Inadequate Maintenance	
K. Servicing equipment in operation		K. Inadequate ventilation / illumination		E. Tools & Equipment	
L. Horseplay		L. Weather conditions		F. Procedures & Practices	
M. Drinkings or drugs		M. Other (specify) _____		G. Wear & Tear	
N. Failure to Comply with PTW				H. Abuse or Misuse	
O. Others(specify)				I. Inadequate Supervision	

Action/s Taken:

Name of Department Head:-		Signature:	Date /Time:	
Name of Safety Officer:-		Signature:	Date /Time:	

Suggested Further Actions (where appropriate) - To prevent recurrence

HSE committee Secretary:	Signature:	Date:

Comments/Recommendations:

Project Incharge :	Signature:	Date:

Distribution: **Original Copy (Signed)** -with Project site, Scan colour copy:- Head HSE&S, Insurance Head, DGM- HR& Admin

Management Representative	
Issued By	

MASTER COPY
ONLY IF IN RED

Road accident statistics

ASHOKA

Ashoka Concessions Ltd,

Ashoka House, Ashoka Marg Nashik

Format -ACL /FR/HSE/07

National Highways Authority of India

National Highway No : 222. Month : Oct-2014

Sr. No.	Date	Time of Accident pm /am	A	B	C	D	E	F	G	H	Vehicle Responsible	No. of affected persons				Nos. of animals killed if any	Help provided by ambulance / private vehicle	Remarks
			Accident Location	Nature of Accident	Classification of accident	Causes	Road features	Road conditions	Intersection type	Weather conditions		Fatal	Grievous	Minor	Non Injured			
1																		
2																		
3																		
4																		
5																		

A : Urban/Rural and details of surrounding land use.
B : 1) Overturning 2) Head on collision 3) Rear end collision 4) Collision brush side swift 5) Right turn collision 6) Skidding 7) Others (Pl. Specific)
C : 1) Fatal 2) Grievous injury 3) Minor injured 4) Non injury.
D : 1) Drunken 2) Overspeeding 3) Vehicle out of control 4) Fault of driver of motor vehicle/ driver of other vehicle 5) Defect in mechanical condition of motor vehicle.
E : 1) Single lane; 2) Two Lane; 3) Three Lane or more without central divider (median); 4) four lanes or more with central divider.
F : 1) Straight road 2) Slight curve 3) Sharp curve 4) Flat road 5) Gentle incline 6) Steep incline 7) Hump & dip.
G : 1) T Junction 2) Y Junction 3) Four arm junction 4) Staggered junction 5) Junction with more than four arms 6) Round about junction 7) Manned rail crossing 8) Unmanned rail crossing.
H : 1) Fog 2) Mist/fog 3) Cloudy 4) Light Rain 5) Heavy Rain 6) Hail or sleet 7) Snow and strong wind 8) Dust strom 9) Very Hot 10) Other extraordinary weather condition.

Awards

Monthly Safety Awards

Objective-

1. To promote improvements in workplace safety.
2. 100% incident free zone.
3. To create awareness in employees.
4. To change the attitudes and behaviours of employees.
5. To enhance motivation of employees.

Criteria for the monthly safety award to the Employee:		**Ranking**	
1	100% use of PPE's		
2	Implementation of site safety measures		
3	Positive Attitude- Employee must demonstrate a positive attitude about safety, Health & Environment.		
4	Leadership/Initiative- Employee must possess leadership/initiative, employee actively raises and closed safety issues.		
5	Punctuality- Employee must be in good standing with maintaining Safety Health & Environment policy on time and attendance.		
6	Job Performance- Employee must be fulfil the job requirement.		
7	Promotion of Safety – Innovative ideas created by employee to improve safety, Health & Environment.		
8	Relationships- To maintain good relationship with supervisors, co-workers etc.		
9	Performance- Effectiveness and implementation on safety , Health & Environment & motivate to other employees for safety.		
10	Authorise- Employee should be authorised for the particular work. (eg. Driver should be license holder).		
11	Contribute to safety in the work area- Employee should be participate in safety week or any safety programms.		
12	Communication- Employee recognizes a recurring safety hazard at work area, and communicates the hazard to their supervisor, Safety officer and others, and takes action to properly secure the area from the hazard,		
13	Reporting- Employee must be report about unsafe act, unsafe condition & identification of Hazard/risk to supervisor, safety officer		
14	Near miss reporting		
15	Employee must be non violating of HSE practices.		

Total Marks obtained

%

Percentage for wining Safety Awards.

60 % to 70% - Employee failed for award
70% to 75% - Employee nominate for award
75 % to 85 % - Good Employee
85 % to 90% - Best Employee
90% and above - Excellent Employee

Chapter – X : Emergency Response Plan/ District Disaster Management Plan

The Emergency Response plan is necessary as a moral and legal obligation of management to protect the safety people, property and environment. The objective of this "Emergency Response Plan" is to provide the organizational guidelines and directions to ensure fast and effective response in any emergency situation in order to save life, property and environment.

At any time, it may be necessary to minimize harm to personal, the environment and business operations. Please remember that saving life and property is only possible if the emergency response procedure is effectively followed. This plan shall be followed in all cases of emergency. Therefore, it is imperative that every employee must be familiar and knowledgeable of what to do in case of emergency.

We have formed our Emergency Response Team in each Base Camp to combat with the Emergency situations.

EMERGENCY RESPONSE TEAM - CORR Ph-II					
Incident Controller (I.C.)					
Mr. M. Saravanan					
Mob. No: +918939814947 / Ext. No. : 101					
Fire Fighting Team	**Contact number**	**Rescue Team**	**Contact number**	**First Aid Team**	**Contact number**
Team Leader - Fire Chief		**Team Leader - Rescue Chief**		**Team Leader - First Aid Chief**	
Mr. Y. M. Kotresh	**8939814950**	**Mr. S.K. Rai**	**8939814974**	**Mr. Rohit Jagtap**	**8939814912**
Senthil Raja	8939814953	B. M. Talele	8939814941	Anup Sharma	8939814949
Arun Singh	8939814925	Pramod Prabhu	8939814942	Anthony Somy	8939814972
Tushar Sonwane	8939814913	Shivaji Kasabe	8939814933	Shiva Kumar	893981457
Ravi Perumalla	9176257476	Nagesh Vadai	8939814970	Arun Boyal	8939814951
Mukesh Singh	8939814931	Ashok Mishra	8939814962	Moses Y.	8939814935
Kapil Lokawar	8939814944	Rajesh G.	8939814919	Gouranga Nayak	8939814903
Ravindra Reddy	8939814939	Junaid	8939814980	Yuvaraj Singh	8939814988
Prashant K.M	8939814943	S. Madhu	9176257447	Sunil Badgujar	8939814911

EMERGENCY PROCEDURES

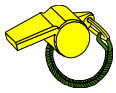
REMOVE

Anyone in immediate danger

ONLY IF SAFE TO DO SO!

ALERT

Others in immediate area
Fire Wardens
Activate Whistle, Air Horn, Bell, Siren etc. 3 times for 30 sec.
Other Tenants and Adjacent Neighbours

RING THE EMERGENCY SERVICES

☎ **Fire Brigade, Police or Ambulance.**

- ***Advise Site:***
- ***Advise address:***
- ***Advise nearest cross street:***
- ***Provide your Name & phone number.....***
- ***Provide details of incident.....***

DO NOT HANG UP UNTIL THE ADDRESS HAS BEEN REPEATED

CONTAIN THE FIRE

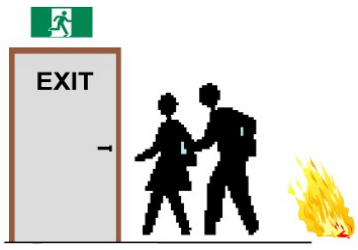
Use correct Fire Extinguisher or Fire Hose Reel
Turn OFF Electricity, Air Conditioning
Close doors and windows to contain fire

ALL IF ONLY IF SAFE TO DO SO!



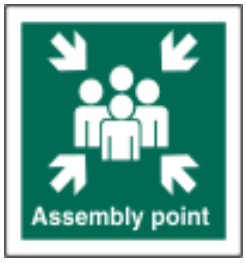

EVACUATE

Proceed to the nearest exit.
Gather together at Exit, if safe to do so, *then*
Evacuate via exit and proceed to the Assembly Area



ASSEMBLY AREA

Conduct Head count, Roll call.
Report to the Emergency Services -Advise missing, provide details of incident.
Do not leave the Emergency Assembly Area or attempt to re-enter the building until given the "All Clear" by the Emergency Services.
Long siren of 1 minute.



First Aid Points		
Sr. No.	Location	First aider
1	Camp Office(Safety Room)	Rohit Jagtap
2	Security (Camp Entrance)	Security Supervisor
3	Q. C. Lab	Prashant Kam
4	Officer Mess	Shankar
5	Labour Camp	Security Guard
6	RMC Plant	Abhay
7	Workshop	Muzumdar
8	Weigh Bridge (12 Km)	Weigh Bridge Operator
9	Weigh Bridge (03 Km)	Weigh Bridge Operator
10	Flyover (16 Km)	Abhishek Mutha
11	Mecaferri Office(05 Km)	Office Person

Disaster Management : State Disaster Management Authority.

1. Honourable Chief Minister – Chairperson – Ex-officio- Chairperson
2. Honourable Minister for Revenue- Member
3. Chief Secretary – Ex-officio- Member
4. Secretary – Revenue- Member
5. Secretary – Finance- Member
6. Secretary – Home - Member
7. Special Commissioner and Commissioner of Revenue Administration- Member
8. Dr. S. Rajarathinam, Director, Centre for Disaster Management and Mitigation, Anna University, Chennai – 600025. – Member
9. Prof. K.N. Sathyanarayana, Department of Civil Engineering, Indian Institute of Technology Chennai-600036. - Member

Source: Dept. of Revenue Administration, Disaster Management and Mitigation, GoTN

Chapter – XI : Community Engagement Plan

During the construction phase & operation phase, Project affected family/person (PAF/PAP) may get employment in EPC / SPV as per project requirement. At Road Development Projects there is always requirement of manpower and labours during the construction and operation phase, where PAP can get employment. Whenever there is manpower requirement, the company gives the priority to Local community / PAP / PAF.

Company /EPC / SPVs will make a provision of employment for local community and PAP as per capabilities, education and experience, some trades are as follows:

Security	Cook	Machine Helper
Flagmen	Office Boy/Peon	Skilled Labour
Gardener	Driver/Helper	Unskilled Labour

Chapter – XII : Bio-Diversity

The organization has implemented the directives and guidelines stipulated in environment clearness issued by MoEF and State Pollution Control Board, Govt. of Odisha. During the construction phase, various adverse impacts on the ecosystem are anticipated in the surrounding areas of the project in terms of increased noise levels, land vibrations during tunneling and blasting, release of air and water pollutants, etc. Mammals are the most vulnerable group affected by these negative impacts, which affect their movement, behaviour and breeding habit. To avoid and minimize the negative impacts of these activities, we do follow strict guidelines as below:

1. Strict instructions (warnings) have been imposed on the workers at project sites to ensure that they do not harvest any species and/ or produce from the forests and cause any danger or harm to the animals and birds at project territory and forest section.
2. Minimum levels of noise during construction activities are maintained.
3. The fuel wood to the labours are not provided from tree cutting meant for the purpose and/or the provision made for the supply of the free/subsidized kerosene/LPG from the depots being set up for this purpose to avoid forest degradation and destruction of animal habitats.
4. To avoid the deterioration of water quality and release of pollutants into the river, proper sanitation facilities and garbage disposal bins have been provided to the workers camp areas.
5. The interference of human population would be kept to a minimum in the adjacent forested areas and no labour camps have been set up in the vicinity of forests and wilderness areas.
6. We strictly adhere to the rules and regulations of the Wildlife (Protection) Act (1972), Biological Diversity Act (2002), Forest (Conservation) Act (1980), Environment (Protection) Act (1986) and guidelines of State Biodiversity Conservation Strategy Action Plans for the preservation of habitats and protection of wild animals.
7. In case any wildlife found having taken up a refugee in any space in project territory, all construction labours have been instructed to leave that place immediately, trained personnel from Department of Forests and Wildlife Warden's office and approved experts shall be intimated for rescue of such wildlife. Any construction activities to be taken up only after any trapped wildlife finds its safe escape.

8. It has been ensured that the noise levels are kept as minimum as possible in the project area, particularly where human and wildlife habitats are located. For the strict blasting regime, i.e. controlled blasting under constant and strict surveillance are being followed:

   Some of the implemented methodologies for reduction and mitigation of noise so as to cause as little disturbance to the animals as possible are given below:

- Only well maintained/new equipment that produces lesser noise has been installed at the work sites.
- The best way to control the noise is at source. Certain equipment that needs to be placed permanently at one place like generators, etc. are housed in enclosed structures to cut off the noise.
- The heavy equipments, like rotating or impacting machines, are mounted on anti-vibration mountings.
- Wherever combustion engines are required, they are fitted with silencers.
- There are provisions of wind barrier around three sides of storage piles. All storage piles are wetted and covered with plastic sheets. The grading operation remains suspended when speed of wind is very high.

Chapter – XIII : Cultural Heritage

In this project corridor, there is neither any Tribal Community nor Cultural Heritage in the immediate vicinity of the RoW (up to 500 Mtrs).

Chapter – XIV : Checklist of Report Submitted to HO

The detail descriptions of the Reports submitted to HO as per the Frequency are displayed below:

ACL Formats :

Sr. No.	ACL Format No	Detail Description	Frequency
01.	***ACL/FR/HSE/01***	Environment & Social Management Plan	Quarterly
02.	***ACL/FR/HSE/02***	Land Acquisition Summary Report	Quarterly
03.	***ACL/FR/HSE/03***	Hot Spot Details And Issue Report	Quarterly
04.	***ACL/FR/HSE/04***	Legal Matrix Report	Monthly
05.	***ACL/FR/HSE/05***	Legal Compliance	Quarterly
06.	***ACL/FR/HSE/06***	Project Water Consumption Report	Quarterly
07.	***ACL/FR/HSE/07***	Road Accident Summary Report	Monthly
08.	***ACL/FR/HSE/08***	ACL-HSE-Monthly Report	Monthly
09.	***ACL/FR/HSE/09***	Incident Report Format	As and when happen immediate within in 24 hrs
10.	***ACL/FR/HSE/10***	Tree Plantation	Quarterly
11.	***ACL/FR/HSE/11***	NCR-HSE Complaint Summary Report	Monthly
12	***ACL/FR/HSE/12***	Emergency Report (Mock Drill Report)	Quarterly
13.	***ACL/FR/HSE/13***	Road Project GHG Tool	Monthly
14.	***ACL/FR/HSE/14***	Complaint Register	Monthly

HSE Work Instruction Report Formats :

Sr. No.	Work Instruction Format No	Detail Description	Frequency
01.	***FR/CO/DO/PR/HSE/01***	Environment Aspects & Impacts Register	Monthly
02.	***FR/CO/DO/PR/HSE/02***	Environment Management Program	Monthly
03.	***FR/CO/DO/PR/HSE/03***	Hazard Identification, Risk Assessment & Determining Controls (Risk Register)	Monthly
04.	***FR/CO/DO/PR/HSE/04***	Occupational Health & Safety Management Program	Monthly
05.	***FR/CO/DO/PR/HSE/05***	Legal Matrix Register	Monthly
06.	***FR/CO/DO/PR/HSE/06***	Waste Management Register	Monthly
07.	***FR/CO/DO/PR/HSE/07***	Waste Water Statistics Register	Monthly
08.	***FR/CO/DO/PR/HSE/08***	Incident/Accident Investigation Report	As and when happen immediate within in 24 Hrs
09.	***FR/CO/DO/PR/HSE/09***	Monthly HSE Report	Monthly
10.	***FR/CO/DO/PR/HSE/10***	HSE & S Monthly Meeting Agenda – HSE – MOM Format	Monthly
11.	***FR/CO/DO/PR/HSE/11***	Weekly HSE Report	Monthly

Last, but not the least, We are glad enough to declare that our organization is IMS certified with Greenhouse Gases Certification.

CERTIFICATE OF REGISTRATION

THIS IS TO CERTIFY THAT THE
INTERGRATED MANAGEMENT SYSTEMS OF

Ashoka Buildcon Ltd.

Head Office:
Ashoka House, Ashoka Marg,
Nashik Maharashtra 422 011
INDIA

Has been assessed and registered as complying with the requirements of the International Standards shown below for the following Goods and Services: -

Design, Development, Construction of Roads, Bridges, Industrial Buildings , Residential & Commercial Complexes, Production & Sale of Ready-Mix Concrete, Operations & Maintenance of Road Infrastructure Projects, Power Infrastructure Projects.

ISO 9001	ISO 14001	OHSAS 18001
International Standards Certifications	International Standards Certifications	International Standards Certifications
ISO 9001:2008	**ISO 14001:2004**	**OHSAS 18001:2007**

Registration No:	QMS/R9I/0014	EMS/R9I/0014	OHS/R9I/0014
Original Registration Date	10-Dec-2009	22-Oct-2007	15-Jul-2008
Recertification Date:	15-Oct-2013	15-Oct-2013	15-Oct-2013
Expiry Date:	15-Oct-2016	15-Oct-2016	15-Oct-2016

Tony Wilde
Group Chairman
ISC Pty Ltd, A.B.N. 31 245 846 984

ISC INTERNATIONAL STANDARDS CERTIFICATIONS

JAS-ANZ
www.jas-anz.org/register

ISC Pty Ltd., Unit 2/10 Gladstone Road, Castle Hill NSW 2154, Sydney, Australia.

This certificate is valid for 3 years from the date of certification on the condition that audits are conducted and paid for as per the Certification Agreement. Should this condition not be met, cancellation procedures will be initiated and the client will be removed from the JAS-ANZ register. This Certificate remains the property of International Standards Certifications Pty Ltd and must be returned upon request. It must not be altered in any way. Intentional misuse of this certificate will result in cancellation without prior notification. Certificates can be checked through certcheck@isc-worldwide.com

ISO 14064.1

International Standards Certifications

ISO 14064.1:2006

CERTIFICATE OF VERIFICATION

ISO 14064.1:2006 - Greenhouse Gases Part 1

THIS IS TO CERTIFY THAT
THE GREENHOUSE GASES OF

Ashoka Buildcon Ltd.

Head Office
Ashoka House, Ashoka Marg,
Nashik 422 011,
Maharashtra
INDIA

Organisational Boundaries:
Operations & Maintenance Project
Road Constructions Projects
Power Infrastructure Project
Ready Mix Concrete Plants
Toll Operations

Has undergone the verification process and has been verified as complying with the requirements of the Standard shown above for the following Verification Statement:-

Verification of Greenhouse Gas Emission and Removals at the Organization Level for Quantification and Reporting as per ISO 14064 Part - 1.

Ashoka Buildcon Ltd. has established 2013 as its base year for GHG inventory in accordance with GHG policy of measuring, monitoring and minimizing its GHG inventory. The GHG inventory for the base year is 24,541 Tonnes of CO2 and 3,257 Tonnes of "CO2 under Direct Emission and Energy Indirect Emissions respectively" for the period January to December 2013.

Tony Wilde
Group Chairman
ISC Pty Ltd, A.B.N. 31 245 846 984

Registration Number: GHG/R91/0014
Verification Date: 08-Apr-2014

ISC Pty Ltd., 2/10 Gladstone Road, Castle Hill NSW 2154, Sydney, Australia.

ISC INTERNATIONAL STANDARDS CERTIFICATIONS

This certificate is valid until the Expiry Date on the condition that audits are conducted and paid for as per the Certification Agreement. Should this condition not be met, cancellation procedures will be initiated. This Certificate remains the property of International Standards Certifications Pty Ltd and must be returned upon request. It must not be altered in any way. Intentional misuse of this certificate will result in cancellation without prior notification.

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